AN EVALUATION OF NURSE PREPARATION AND PRACTICE IN ADMINISTERING MEDICINE TO CHILDREN

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Abstract

Administering medicine to children is a part of everyday nursing practice that is complex and multi-faceted. However, medicine errors are prevalent in all areas of nursing. One means for strengthening a system of safe medicine administration might lie in developing student nurse preparation for registered practice.

This thesis evaluated nurse preparation for administering medicine to children using a multi-stage descriptive design. Preparation through one Diploma in Nursing was evaluated over a period of two years.

20 registered nurses were initially interviewed, and 201 activities characterising practice in administering medicine to children were identified. Activities were formulated into a questionnaire and were rated by 66 students and newly registered nurses according to their perceived involvement. In a second data collection, student perceptions of their involvement were compared with those of their practice-based assessors.

Respondents viewed themselves as highly involved in activities requiring simple practice tasks and communication with families and children, while they were less involved in decision-making, teaching of peers and a small number of more advanced 'adventuring' activities. At qualification, although nurses had completed all theoretical and practical outcomes they still perceived themselves as not fully involved in 25% of practices relating to medicine administration. This supports existing work in relation to the transition of students to registered practice, but is unique in providing specific evidence related to medicine administration.

Perceptions of the level of involvement varied between the practice based assessors and their students, but no significant difference was established between the responses of students who were assessed by assessors and those who were not. Student self-perception may not therefore be consistent with observed practice assessment, and should be explicated as an important part of progress evaluation.

To determine whether course material corresponded to student learning, teaching materials were analysed and compared with student involvement in the role. In medicine administration process and in legal implications there was an increase in student perception of involvement that corresponded with the time they received teaching. They were less immediately involved in activities requiring mathematical skill and pharmacological knowledge, suggesting learning may need greater facilitation in these areas.

In conclusion, nurse preparation should seek to address the breadth of role activities within the domains found in this work. Consideration of factors influencing effective role function and transition, as well as competence, should be included in a strategy for enhancing future practice.

1 Chapter One

1.1 Introduction – A Personal Context

The value of doing good and avoiding harm operates implicitly as nurses administer drugs... Nurses who administer medicines in effect commit themselves to providing for their patients' best interests. When nurses make medication errors they violate the value to first do no harm and fail to uphold the trust that patients place in nurses. Unfortunately, medication errors are a part of the clinical reality of nurses' work involving drugs...
(Wolf, 1989 p 8)

Media reports of serious errors in medication over the past few weeks will have sent a shiver down the spines of most doctors, nurses and pharmacists. Such incidents are sober reminders of our duty to care and how easily mistakes with potentially devastating consequences can be made...
(Shepherd, 2001 p19)

Medicine administration is a part of clinical practice with a clearly identifiable theoretical component, and therefore the provision of an appropriate curriculum within nursing education plays a major part in facilitating practice. Competent registered practitioners should help to minimise errors, and fulfil the commitment of children's nurses (and vicariously nurse teachers) in providing for the best interests of sick children.

Errors are potentially fatal to clients, always detrimental to the welfare of the patient and potentially expensive in terms of legal action against the health trust and the perpetrator (Pirie, 1987; Miller, 1993; Ferner, 1995). Although guidelines are in place to ensure patient safety at both legal and professional levels, incidents of medication error are widely recognised and between three and six percent of

hospital inpatients will experience an adverse drug event, (Leape et al.1995; Kaushal et al. 2001). Within UK children's nursing specifically, Ross et al (2000) suggested a much lower rate (0.15% of admissions). This was a longitudinal study appraising incidence and typology over five years, but only reported error using documentary analysis of error report forms. The researchers themselves concede that a change in the report form part way through to make it 'less punitive' led to an increase in reporting. It is difficult, in the face of other evidence (Kaushal et al. 2001), to accept the findings of this study as anything other than an underestimation of true error rate. However, even if the real situation were known, their finding that eight percent of cases involved calculation errors of tenfold magnitude and that 56% of errors involved intravenous medication, remains of concern.

Whilst much literature discusses the effects of error on patients, it is also pertinent to consider the effect of error on nurses. Arndt (1994) found that medicine error may cause the nurse involved severe distress, loss of confidence and self esteem to the extent that some nurses felt unfit to continue their employment. Gladstone (1995) further found that ten out of a sample of fourteen nurses who had made medication errors, expressed emotions associated with outcomes of extreme distress, fear and anxiety.

My interest in this aspect of nursing arose from an ongoing dialogue between service providers and educators where an unacceptable incidence of reported medication error by newly registered nurses was identified as a particular problem. Concerns were also expressed that student nurses appeared unable to follow

simple mathematical formulae in order to calculate medicines safely. However, issues relating to student mathematical ability were already being acknowledged within the study school of nursing, and strategies were in operation to facilitate students to develop these skills (Hilton, 1996; Hilton, 1999).

Although mathematical ability is important, the provision of practitioners who can practice safely in relation to medicine administration must also be set within the complex context of practice. It is simplistic to assume that if students have good mathematical ability that they will be safe practitioners, poor calculation only accounts for some of the mistakes made (Gladstone, 1995; Ridge et al. 1995; Cousins and Upton, 1996). A tendency however, to emphasise mathematical calculations may mask other needs relating to the development of relevant clinical knowledge and skills, which equally ensure quality practice, and prevent the occurrence of other types of medication error.

In the University where this study took place, students followed a Diploma in Nursing course that should have prepared them to administer medicine to children. They met the requirements of registration prior to course completion according to The Nurses Midwives and Health Visitors Rules Approval Order Rule 18a (Statutory Instrument 1983, No 873). However, upon qualification some nurses were reported to have had difficulties with this aspect of professional practice, as evidenced by an increased number of error reports submitted to practice managers.

1.2 Background

Initial discussion with service managers included consideration of the error reports used as a means to determine failures within medicine administration practice, and also the background context of their concerns. Whilst an error report may initially appear to identify a problem, this record alone is now recognised as insufficient (Department of Health (DOH), 2000a), as a medication error may represent a symptom of an underlying problem rather than being one single isolated incident. As an example, a nurse in charge of a busy surgical area at night may have limited staff and a rapid turnover of patients causing heavy workloads and subsequent stress. There may be few doctors available, and they may be on call to other areas of the hospital or coping with emergencies. If that nurse finds a poorly written prescription, they could make an interpretation of the prescription and give the medicine, or they could withhold the medicine until they have contacted the Doctor, which may take time. It may be tempting to make a reasonable guess when a drug is familiar, or there is supportive evidence in the formularies, but this remains a potential source of error, which may be dangerous for an individual patient. Withholding the medicine however, may also ultimately constitute an error, as the patient fails to receive their treatment.

Multi-system medication errors such as the above illustration are common occurrences (Leape et al. 1995; Huff, 1996; Gulland, 2001), and as the nurse is at the interface with the patient, it is likely that they will be the ones who are reporting errors to service managers. Student nurses however, are usually supernumerary and mentored by registered nurses. They may not be expected to make these difficult 'real world' decisions. The problem may not arise until they

become registered and this then would become part of their learning during the transition to qualified practice. Indeed, research into the transition period between student and registered nurse identifies this as a difficult time (Jacka and Lewin 1986, Jowett 1994, 1995; Luker et al, 1996; Gerrish, 2000). However, these studies tend to identify transition problems as focused mainly upon managerial and organisational skills rather than clinical practice deficits. Jowett (1995) noted clinical competence as an issue in her small study, which followed up registered nurses 20 to 24 months after qualification. Gerrish's (2000) research highlights clinical skill in medicine administration as a particular contemporary problem acknowledged by newly registered nurses, but maintains that transition issues usually resolve themselves within the first few months after qualifying. The United Kingdom Central Council for Nursing, Midwifery and Health Visiting (UKCC) (1991) also acknowledge the short-term nature of transition problems in their recommendation for four months of preceptorship.

It is perhaps paradoxical that whilst newly registered nurses are deemed to need preceptorship, even for a short term, they are permitted to administer medicines to children alone, immediately after qualification (subject to local policy) (UKCC, 1992b; Nursing and Midwifery Council (NMC) 2002b). Four months may seem short term to those researching transition, but in terms of opportunity for error to occur it represents an unacceptable risk if new nurses perceive themselves as inadequately prepared for this responsibility.

Children's nurses administer medicine to a child as part of a multi-disciplinary team and within a complex backdrop of health care practice. Within this setting,

many extraneous variables have been highlighted as causes of error in medicine administration. Poor communication, poor use of technology, inadequate resources, shift working and poor prescribing may be included, as well as lack of awareness of locally based policies (Gladstone, 1995; Roseman et al. 1995; Williams, 1996). These variables may not be immediately apparent in causing an error, as the outcome appears to be simple failure to give a patient the medication according to the prescription. Newly registered nurses may be vulnerable, because they may not fully appreciate the context of their practice. Moreover, it has been found that experienced nurses redefine some incidences of error as 'good' clinical decision-making (Baker, 1998; Osborne et al. 1999) and thus do not see the need to complete error reports. A newly registered nurse may be more likely to interpret their actions as deviating from taught rules, and thus complete an error report, compared to an experienced nurse who may be able to rationalise the outcome of their action as a safe clinical decision.

For new nurses, the main preparation for practice in this role takes place within a pre-registration course. Their registered role in medicine administration, and indeed how they perceive such practice is, thus, governed (at least in part) by this preparation. However, the nurse's role in practice has changed, and continues to do so (Miles, 1986a; Miles, 1986b; Savage, 2000). Nurses are responsible for named patients (DOH, 1996); hospital stays are of shorter duration (DOH, 1991; Lansdown, 1996) and parents are more involved in their child's care than ever before (Callery and Smith, 1991; Derbyshire, 1993; Callery, 1997). Further, with the advent of self-administration policies, nurses may not administer many medicines at all (Sutherland et al.1995; Wright et al. 2002), increasing their

responsibility to educate and observe rather than administer direct care (Coyne, 1996). There is a different accountability for a nurse to ensure that a child takes their medication appropriately and stores it safely, than to merely administer it. This implies a wider consideration of knowledge and skills that may include teaching a parent or child to make the most effective use of a prescribed medication, as well as providing monitoring and support.

For students, as well as for registered nurses, the reduction in the need to perform 'hands-on' care combined with an increasing need to develop communication skills potentially reduces the opportunity to gain and develop clinical practice skills. Newly registered nurses may therefore be less experienced in clinical practice than ever before, particularly in techniques less commonly used in hospital. An example could relate to the use of insulin pens where nurses may treat the child and family initially, but the main remit of the nurse's practice would be to prepare the family for continued self-care at home. Nurses may be learning new skills and at the same being prepared to teach them, with limited opportunity to practice the clinical skill itself.

Professional change is also an issue as medicine administration practice by nurses is becoming more specialised. A reduction in the working hours of junior doctors has resulted in nurses to adopting roles (such as administering intravenous medications) that were traditionally undertaken by doctors (National Health Services Management Executive (NHSME), 1991).

Further, the professional expectations of nurses have changed. Nurse preparation must now also work towards recommendations that nurses should be able to prescribe medicine and treatment for their patients (Mullally, 2000; DOH, 2000c; DOH, 2002).

1.3 Statement of the problem

Such rapidly evolving practice has the potential to contribute to dissonance between student preparation and registered nursing work and nurse educators must maintain curricula that can keep pace. Indeed, recognition of the need for increasingly dynamic curricula is recognised, (UKCC, 1986; 1999; DOH, 1999). The report, 'Project 2000 - A New Preparation for Practice' (UKCC, 1986) led to changes in theoretical and practical preparation and assessment of students, and in the nature of the students themselves, who stopped being a part of the Health Service workforce. However, this transformation of nurse education has created changes in the requirements and governance of nurse preparation with a desire to meet the demands of an increased emphasis on academic work (Eraut et al. 1995). Additionally, a transfer of Schools of Nursing into higher education during the 1990s, meant that many teachers and students had physical moves away from clinical practice areas and into university campuses. This, combined with competing demands upon nurse teachers' time (including university requirements to be research active, publish and teach increasing student numbers), has in some cases limited the nature of clinical support and education that teachers can offer students (Clifford, 1995a; Day, et al. 1998).

Within Diploma in Nursing courses, the abolition of a system of four practice based assessments including medicine administration (GNC, 1969; ENB, 1990) and replacement with continuous assessment means that there is no requirement for assessment of specific skills in this element of practice. The development of clinical skills, (including those required for ensuring effective medicine administration for children) may have been adversely affected by such change in education programmes. Students would thus meet course competencies and pass their programme of study yet remain under-confident in some critical aspects of practice.

In summary, both education and practice for children's nursing have undergone change. In spite of all good intentions, the relationship between students learning, their competence and the requirements of a future role in practice, may have become disparate.

1.4 Conclusion

In reviewing the initial issue raised by trust managers, there are justifiable concerns about the achievement of safe practice by newly registered nurses. These are situated within a wider context of error in medicine administration as an international problem that is not unique to children's nursing. The incident report forms that initially signalled these concerns were, however, designed to outline errors, and identify action taken to remedy them, and they were kept for legal reasons. Reports tend to be brief, simplistic and inclusive. Until recently there has been no requirement to examine the problem of error as a symptom (DOH,

2001), or consider relevant wider issues such as nurse's preparation for their role. Reporting is reliant upon the nurse's decisions in identifying the occurrence of error and so may be incomplete in relation to practice. (Baker, 1998; DOH, 2001). Further, the use of error to define the quality of practice addresses the negative aspects, but does not evaluate the positive ones. It may discriminate against those who are conscientious enough to declare their difficulties. The subject of medication error in nursing is a complex one, and many issues need to be addressed in understanding its nature and creating effective strategies for reduction of incidents (DOH, 2001). However, if newly registered nurses do not feel prepared for practice in spite of meeting all pre-registration requirements, then they may be unable to function effectively.

The aim of this research is to evaluate nurse preparation and practice in administering medicine to children in order to determine the nature of a contemporary registered role and to describe student nurses' perceptions of their developing involvement in role activities. By comparing these elements with taught provision in one school of nursing, this study will search for a strategy that may enhance preparation for registered practice.

Practitioners and teachers within the school of nursing and the health trusts acknowledged the importance of investigating the above issues further. There was willingness to participate in this project, and adopt evidence in changing practice.

1.5 The Organisation of this Thesis

This chapter has outlined a background to the research problem. A presentation of my research proposal to the School of Nursing, culminated in a one year funded study. The review of the literature began within this time, as did the initial part of the research work based on the aims identified in section 1.6 of this chapter. Activities were identified that comprised a nurse's role in administering medicine to children, and student nurses' perceptions of their involvement in such activities were evaluated. When the first year ended, a summary report was completed for the school of nursing and findings were disseminated through conferences (See Appendix 1). However, it was evident that a more detailed analysis could help to illuminate initial findings. Thus, an additional small study replicated initial findings. This served to test reliability of the measure used for robustness over time and by repeated measures. Initial assumptions were further explored by comparing both sets of results and through the development of illustrative case profiles. The taught component of the Diploma in Nursing Course attended by respondents was also reviewed.

The organisation of this thesis reflects these developments. Chapters One to Six identify the background context for the work, and identify the nature of nursing practice in administering medicine to children, focussing on the first aim. Chapters Seven to Nine evaluate student and newly registered nurses' perceptions of their involvement in medicine administration and the academic preparation provided in one School of Nursing (addressing aims two, three and four). In Chapter Eleven, a further survey was undertaken and student perceptions were compared with those of their assessors, thus revisiting the second aim of this work

to illuminate previous findings. Chapter Twelve discusses future directions in the preparation of nurses for competence in administering medicines in the light of the conclusions drawn, thus addressing the fifth aim of the study.

1.6 Aims of the Study.

1) To identify activities which comprise the role of registered nurses in administering medicine to children.

2) To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.

3) To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one Diploma in Nursing Curriculum.

4) To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

5) To propose a strategy for preparation to enhance role function for nurses in administering medicine to children.

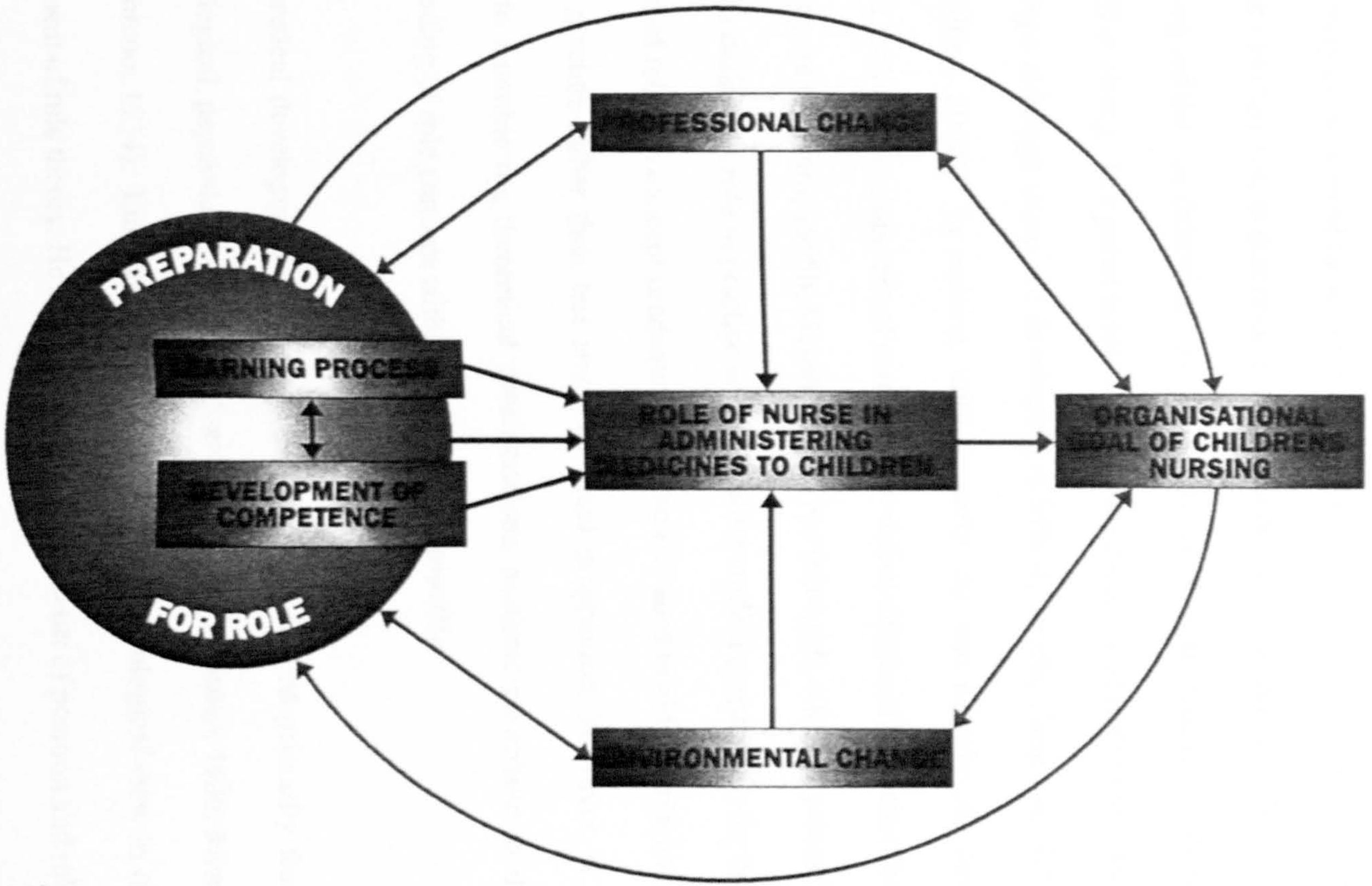
2 Chapter Two - Review of the Literature

2.1 Introduction

An initial consideration of the related literature led to the development of a framework for enquiry that enabled me to explore relationships, and organise material for inclusion (Figure 1). This has been a pivotal point of reference in the development of this work and relationships between the concepts were constantly reviewed. The framework illustrates that the concept of role and its relationship with preparation through learning and development of competence is central to this work. This is set within a complex context of professional and environmental change. Individual achievement of effective role function in administering medicine contributes to an organisational goal of children's nursing by supporting a philosophy of best care.

Examination of each of the concepts may constitute an entire research study in isolation. However, the purpose of this work is to examine their construction as applied to this specific practice problem, rather than dwelling upon the individual (and frequently contentious) theoretical nature of each one. The focus thus lies within evaluating the contemporary role of the nurse in medicine administration practice and in progressing knowledge about how student nurses perceive their involvement. The ultimate goal is to enhance preparation for practice. Original theoretical positions and research that has applied such theory will be acknowledged, to lead to a definition of how the concept of role, and preparation through learning and competence can be interpreted within this work. The research activity in subsequent chapters will be underpinned by this interpretation.

Figure 1 A FRAMEWORK FOR ENQUIRY, PROPOSING RELATIONSHIPS TO BE EXPLORED WITHIN AN EVALUATION OF STUDENT PREPARATION FOR MEDICINE ADMINISTRATION TO CHILDREN



Relationships identified within early reading which contribute contextually to the preparation of students to administer medicine to children.

Relationships to be explored within the literature review.

2.2 Role Concept

Role concept relates to the way in which an individual performs activities and the way they may be perceived to perform them, both by themselves and by others. Within the literature role is described both as a theory and as a concept. However, it can be argued that, by definition, role knowledge is as yet untenable as a theory as it is still evolving. In a purist sense it has limited evidence of tested theoretical relationships although these are developing (Clifford, 1995b; King and King, 1990, Phillips, 2002). In nursing, until recently, the use of role has been concerned with the development of constructs to define relationships rather than to test them out (Clifford, 1995b; Meleis, 1997). For this work, which is primarily focused on defining a role in practice and evaluating student preparation for this, the notion of role as a concept is adequate because it is used to aid definition and examine practice rather than test any theoretical proposition. However, it is relevant to examine the theoretical considerations, as these contribute to the understanding of role concept within contemporary practice.

The theoretical development of the concept of role is derived primarily from anthropological, psychological and sociological disciplines (Linton, 1936; Mead, 1934; Moreno, 1934). Linton (1936) identified an anthropological view in the development of role theory. He distinguished between status of position and role, suggesting that role represents the 'dynamic' aspect of status. Indeed, when an individual puts the rights and duties that comprise his attributed status into action, he is seen as performing a role. Linton (1936) defines a role construct as the total

sum of the roles performed. This indicates what may be expected from society (by offering expected roles) and what the individual may do for society.

In psychology, the concept of role-playing has been developed for disturbed patients within psychodrama therapy (Moreno, 1934; Biddle and Thomas, 1966; Landy, 2000), whilst from a sociological perspective, the development of a symbolic interactionist approach was enhanced through the examination of the concept of role taking (Mead, 1934).

Subsequent development and application of these early deliberations has been complex. In addressing the concept of role-playing within the presentation of self in everyday life, Goffman (1959) identified a clear relationship between the thoughts of Moreno (1934) and in the symbolic interactionist approach of Mead, (1934). Roles are thus made and performed by individuals, but they are also taken in order to demonstrate symbolic position. Importantly however, the inclusion of any role player is likely to be determined by the acceptance of his performance by others (Goffman, 1959).

Within an evaluation of preparation of nurses to administer medicine to children, the way in which practice competence is assessed may be seen to rely on this issue. The perception of the role player is important. Indeed, the way that a role may be taken in the first place is dependent upon the individual's self-concept (Roy and Andrews, 1991). Once performing, they must be able to play the role appropriately, but they are also dependent on their enactment being noticed by those assessing them. It is also pertinent to recognise that there are differences in

the way roles are perceived and played by those performing within powerful and powerless relationships (Forte, 1998). Differences relate to players' motivation to perform roles and the accuracy of interpersonal communications relating to roles undertaken (Forte, 1998).

The relationship between role and situation

Role has also been used as an adjective to modify other relational concepts (Biddle and Thomas, 1966). Role by this definition includes behaviours that interact with situations or environment as a necessary consequence of an 'interactionistic position' (Magnusson, 1981; p3). It is suggested that there is a conceptual distinction between the environment as it is, and as it is perceived within the mind of an individual who is appearing and acting within it, (Magnusson, 1981; Koffka, 1935; Murray, 1951; Tolman,1951). These domains relate closely to the concept of role performance identified by Moreno (1934) Goffman (1959) and Forte (1998).

The above discussion is important. It leads to a proposition that understanding an individual's conception of the world and his interpretation of the situation in which he finds himself could enhance understanding of actual behaviour (Magnusson, 1981). In nursing, administering medicine is a part of practice where actual behaviour is observed in order to determine competence. If practice behaviours are performed for the benefit of those observing rather than relating to the realities of registered practice this would cause difficulty when real practice has to be undertaken. Failure to be able to perform 'real' practice may result in vulnerability to error.

Alternatively, the difficulties experienced between student and registered practice could also relate to the relationship between the performance of role and the environment in which it is practised (Magnusson, 1981; Biddle and Thomas, 1966). It is suggested that environmental constraint can affect role behaviour in three ways:

- By precluding engagement within a behaviour
- By permitting but not fully engaging in the behaviour
- Or by literally forcing behaviour into being

(After Biddle and Thomas, 1966; p55)

In support of this theoretical perspective, contextual features can be seen to add sanction within the practice of administering medicine. Indeed, precluding, permitting and forcing elements are clearly identifiable in the following review of the professional practice environment.

Administering medicine – the impact of a professional practice environment

In law, administration of medicine to patients within hospital and health care settings is regulated, and thus behaviour is constrained under the Medicines Act, (1968); The Misuse of Drugs Act, (1971); and The Misuse of Drugs Regulations, (1985). However, the law also permits change in the working environment and can even force new initiatives into being. In areas where nurse prescribing is developed there are additional primary legal provisions in the "Medicinal Products: Prescription by Nurses etc Act" (DOH, 1992). European community law

further supports some aspects of British law, (European Community Article 1.2, EC Directive 65/65EEC).

Professional regulation of medicine administration practice is also influential. The NMC offers recommendations to nurses to in the Code of Professional Conduct and Guidelines for the Administration of Medicines (NMC, 2002a; NMC, 2002b) and thus effectively identifies a national constraint. It is noticeable however, that the professional bodies governing nursing have become less prescriptive and thus more permitting, as nurse's roles develop (UKCC,1992b; UKCC, 2000; NMC 2002b). Multi-disciplinary guidance is also available within recommendations for pharmacy, medicine, nursing and midwifery (DOH, 1988; Audit Commission, 2002).

Historical differences between professional recommendations have however, contributed to differences in local policy. The UKCC (1992b) identified that registered specialist paediatric nurses should be able to check medications alone. Where registered nurses without specialist qualification are caring for children, then two nurses should check medicines for children. The Duthie report (DOH, 1988) recommended that in the case of children, two 'authorised' nurses should check medicines at all times. Though this authorisation indicates that nurses should be registered with their professional body, the part of the register is not defined, thus indicating that nurses are not required to have any specialist paediatric qualification.

Policy (and thus nurses practice at work) is determined by the local trusts acceptance of a particular set of recommendations, and may be subject to regional

variation. Indeed, such conflict, although seeking to create permission, may actually result in creating confusion that precludes a full engagement in practice. Some areas include students nurses as 'second checkers of medicines' within their policies, whilst others do not. Students working across two trusts may experience confusion in what they are permitted to do, and for new employees, the lack of national standards yields a similar problem. This feature is important in nurse education where one school of nursing may serve several trusts each with different codes of practice.

The environment for 'administration' of medicine further precludes involvement by students because of poor definition, including technical discrepancies surrounding commencement and completion. The nursing standards and guidance view 'administration' as part of a greater role of the 'treatment' of the patient, which also involves prescribing, dispensing, receiving and recording a medicine (UKCC, 2000; NMC, 2002b). However, some have considered receiving, and recording medication to be an implicit part of administration (Gould, 1988; Downie et al.1995). Others divide the concept of 'administration' into component parts such as dose calculation, preparation and giving (Hockley and Samuels, 1995). These definitions cause problems for assessment. Depending upon assessor interpretation, one student may be deemed competent in administering medicine if they have been observed putting a medicine in the mouth of a child. Another student may have to demonstrate wider responsibilities relating to the receiving, preparing and recording of medication.

The Crown Committee noted idiosyncrasies regarding the Medicines Act (1968) and nurse administration of medicines (DOH, 1998; 1999). They stated:

> *During the course of the review it became clear to the review team that different interpretations are put on many of the words used in this field. The team has therefore produced a glossary which sets out the definitions of terms used by the team in this report.*
> (Department of Health, (1999) Review of Prescribing, Supply and Administration of Medicines – Final Report: Section 1.8).

The Crown Committee finally acknowledge the definition of medicine administration in agreement with the Medicines Act (1968, Section 130). This is consistent with the UKCC (2000) definition and would suggest that the remit of this work might be in addressing 'Administration in Context' rather than simply considering the act of administration, which is defined as:

> *To give a medicine either by introduction into the body, whether by direct contact with the body or not, (eg. Orally or by injection or by external application eg application of an impregnated dressing).*
> (Medicines Act 1968, Section 130)

Legal and professional guidelines suggest that the prime focus of nurse's action in medicine administration is task-orientated behaviour. Such behaviour is concerned with the achievement of a correct procedure for medicine administration (Kee and Hayes, 1993; Hall, 1998). Nurses interested in ensuring safe practice have adopted a similar view, embracing the concept of guiding rights in aiding definition of a safe process of practice, (Wink, 1991; Kee and Hayes, 1993; Hall, 1998). The rights vary between authors both in number and content and a list of 'wrongs' was also identified in classifying medication errors

(Segatore et al.1993). However, it is possible to create a cumulative list of eight rights:

The right medication should be given to;

- the right patient
- at the right time
- on the right date
- via the right route
- in the right dose
- in the right preparation
- and the right procedure for recording administration should be adhered.

(After Wink, 1991; Kee and Hayes, 1993; Segatore et al.1993; Hall, 1998).

The rights offer one perspective in achieving medicine administration safely, but they are ritualistic, and suggest a simplistic environment constrained by a checklist. They cannot facilitate safe practice on every occasion since they preclude other equally pertinent issues. For instance, the rights may be completed but the nurse may fail to determine the expiry date of the medication, or may give two incompatible medicines together. Both of these incidents would constitute an error. Williams (1990) pointed out similar risks, commenting that whilst policies should be adhered to, they should not be adhered to unthinkingly, and observation is needed at all stages of medicine use.

Error in medicine administration has also been presented in a constrained and simplistic manner. Error by omission is identified as failing to give, whilst error

by commission would be giving inappropriately (Wolf, 1989; Kee and Hayes, 1993; Downie et al, 1995). Causes include procedural omissions, poor conceptual ability in mathematical calculation (Cooper, 1995; Gladstone, 1995) as well as poor use of equipment (Gladstone, 1995; Cousins and Upton, 1996; Carlisle, 1996c; Ross et al. 2000). Communication breakdown, or "...an interruption at any stage of the drug use process" (Caitens 1996; p1) is also a major factor. However this vision does not account for the context in which the process has taken place.

Individual characteristics and ability may also act as precluding, permitting or forcing influences (Biddle and Thomas, 1966). In no particular order, shift working; the availability and use of calculators; anxiety about calculation gender differences; mathematical ability and attitudinal and societal issues have all been identified as influential to safe practice (Tobias 1978; Hendel and Davis, 1978; Pirie, 1978; Fulton and O'Neill, 1989; Adams and Duffield, 1991; Roseman and Booker, 1995; Hutton, 1998a; Kapborg, 1995; Tarnow and Werst, 2000; Kapborg, 2001).

Medicine administration practice must also take into account much wider systems in recognising that errors may be forced into being as the result of the environment (Leape et al 1995). A number of examples illuminate multi-system errors in complex health care situations (Morris, 1999; DOH 2001a). In these, as with the case of Richie William, administering the medicine incorrectly was not simply a situation where one professional had made a single error within a process.

> *A medicine administration error at Great Ormond Street Hospital in 1997, led to the death of twelve-year-old Richie William. Although two doctors were involved in this tragedy, the subsequent inquiry found shortcomings in the organisation of care, including evidence of poor communication at all stages by the care team.*
> (DOH, 2001a).

Whilst medication errors cannot be attributed totally to systems of work, there is a need to understand the complexities of the environment to appreciate the role in practice. Tackling potential weaknesses of these systems is thus an important part of nurse's accountability. This approach has been also adopted by multiple disciplines within the UK, in an attempt to reduce error within the NHS (DOH, 2000a; DOH, 2001; Audit Commission, 2002).

A safe system of working is therefore important as well as a safe individual process. Further, guidance regulating both of these is likely to be influential upon an individual's perceived performance within medicine administration in the ways that Biddle and Thomas (1966) propose. However, consideration of operational practice is lacking, in terms of what nurse's actually do. Further, it is not clear whether these imposed guides feature in defining actual behaviour within practice. A review of research related to clinical nursing practice in administering medicines revealed three studies of particular interest.

Ridge and While (1995) reviewed the work of nurses in a 19-bedded sub regional neonatal unit, using a time sampling method of observation. Although a small study, their observations are unique as they support an environmental context that appears more likely to force and permit than constrain. Examples of activities include counselling relatives regarding medication and nursing activities related

to multidisciplinary communication. These aspects were in addition to more commonly identified tasks of calculation and management of administration.

One tenth of nurses' work time was identified as relating to activities in medicine administration. If this observation is correct, it serves to support the importance of ensuring appropriate preparation for such a role. However, one must remain aware of limitations. Ridge and While (1995) explored a specialist area of practice, which may have meant that their sick infants required a large number of medications. Nonetheless, it is important to question to what extent wider activities might be included within administering medicine to children, and also whether the practice speciality is influential in the activities carried out.

A second study examined the role of the nurse in offering medication education to clients within adult settings (Latter et al. 2000). This study was again supportive of an environment with few constraints for professionals. The nature of nurses' contribution in facilitating medication administration is defined as multi-dimensional, including liasing with other health care professionals and patient monitoring. The main focus of patient education was identified as a fundamental part of medicine administration practice, although it was not always performed well. This study was not available at the commencement of this research and does not include any paediatric settings so it is difficult to adopt their findings. However, review of medicine administration literature across different branches of nursing suggests similarities, especially in relation to clinical skills required and the process elements of the activity (Hall, 1998). This would strengthen the acceptability of these findings.

Finally, Benner's (1984) work merits discussion. Benner interviewed 21 pairs of newly registered and experienced nurses to gather data from which she identified 31 nursing competencies that she then ascribed to domains of caring within nursing. Administering and monitoring therapeutic interventions as one domain, in which she identified administering medications accurately and safely; monitoring untoward effects reactions, therapeutic responses, toxicity and incompatibilities as one competency.

The aim of Benner's work was to encompass the entirety of nursing in proposing a model for professional development. She recognises that medicine administration practice is underrepresented within her work. The exemplars demonstrate nursing practice in adult and mental health settings as mainly applying extensive theoretical knowledge about drugs to decision making during their working day, rather than following any particular procedure to administer a medicine. Although potentially offering the further dimension of practically applying knowledge in decision making, this work is dated and bound by a different culture. In Benner's scenario, medicine administration is very much part of pharmacy practice. This is important given contemporary recommendations for pharmacy to take a lead in medicines management (Audit Commission, 2002) as British nurses are increasingly having to respond to multi-professional guidance. However, the main interest of this work relates to Benner's framework for assessment, as the study school of nursing currently uses it. It is unable to illuminate a contemporary role in British practice by newly registered nurses.

Instructive material is not commonly utilised in reviews, since it is recognised as empirically weak (Burns and Grove, 1993). However, the limited empirical evidence related to identifying specific practice in administering medicine to children has meant that this source of information is relevant.

An early 'typical' insight into medicine administration practice in children's nursing identified both nurse and child's role in treatment and highlighted potential problems with compliance (Ellis, 1995). These views are concurrent with other writers and they identify needs of children and families. Further, they acknowledge children as being different from other client groups (Dearmun and Whelsh, 1995; Wong, 1995; Hall, 1998; Moules and Ramsey, 1998; Huband and Trigg, 2000). One example of such a difference relates to the calculation of doses, as there are few standardised dose ranges for children (Wong, 1995).

These authors also take into consideration key principles of administering medicine already discussed within this review. Legal and professional practice constraints, the nurses need for knowledge related to medicine, and some typical practical requirements are included. Skills are identified such as the administration of an injection or an oral medicine, and helpful 'tips' for giving medicine to children, for example, how to crush tablets, or how to optimise the effectiveness of giving syrup to a small child (Wong, 1995; Huband and Trigg, 2000). Moules and Ramsey (1998) offer a more comprehensive illustration of practice than has been available in earlier work, and again contribute to an environmental context that is notable for its diversity rather than its constraint.

This diversity is further illustrated through examining change in practice. As an example, the Duthie report (DOH, 1988) recommended that some patients should be able to administer their own medication. In light of this, self-administration schemes have been developed, indicating a move from a traditionally recognised role for patients as passive recipients to an active participants in their own care. It has forced a change in medicine policies and in the nurse's role (including children's nursing) (Sutherland et al. 1995; Furlong, 1996; Queen's Medical Centre, 1998; Wright et al. 2002).

Finally, some specific innovations in children's nursing are evident, but these are concerned with particular symptoms or clinical specialties (Gallagher, 1999; Latham, 2000). In paediatric accident and emergency (A&E), Trigg and Fox (1996) presented findings which encourage the use of nurse practitioners in leading decision making about medicine administration within strict protocols. Although a single centre study, this initiative identified much potential for the improvement of effectiveness of A&E services.

The innovations imply an interactive relationship within medicine administration that supports the earlier proposal that there are differences between specialities. It is not appropriate to generalise the nurses' perspectives of their practice from this literature however, because of the specificity of each to the issue with which it is concerned. The works are published because of their uniqueness rather than their commonality in current practice.

To summarise, the environment in which practice in medicine administration takes place may:

- Preclude or force behaviours through the multidisciplinary discourse governing medicines administration practices (eg. DOH, 1988; UKCC, 1992b; DOH, 1999), through differences between local policies and systems of management of medication incidents (Leape et al.1995; Ridge et al.1995), and through nurses' own desires to impose a checklist of 'rights' for safe practice (Wink, 1991; Kee and Hayes, 1993; Segatore et al.1993; Hall, 1998).
- Permit or force behaviour through development of specialist medicine administration techniques (Gallagher, 1999; Latham, 2000) and development of specialist areas of practice within children's nursing (Trigg and Fox, 1996).
- Permit, Force or Preclude behaviour by experienced nurses, who may make decisions based on their knowledge (Benner, 1984).

Constructs related to role theory, including environmental assessment and situational analysis derive from an "...array of relatively distinct and mature research traditions within scientific psychology" (Craik, 1981; p37). However, the expansion of research knowledge through collaboration into other areas (including nursing) is comparatively recent. There has been little previous empirical analysis of interaction between the theoretical concepts of role and the nursing practice situation. Indeed, no evidence was found of such an exercise within the practice of administering medicine although clearly this would have benefits in enabling

clarification. In nursing, literature has accepted a polarised view of role related to either the development of roles, or the difficulties in meeting norms or expectations, rather than defining role activities (Clifford, 1995b). There is a need for research to examine aspects of practice in order to lead to greater understanding of the demands of nursing roles. As Clifford further comments, "...constructs to describe or define everyday practice in the context of role are lacking" (Clifford 1995b; p81).

In the present work, the initial problem identified was that some nurses qualifying from a Diploma in Nursing course reported errors in medicine administration and were perceived by other nurses as unable to perform effectively. To date within this review, medicine administration has been proposed as a role that is subject to complex environmental elements that may constrain, permit or force practice into being, as well as one in which learners may have individual perceptions of required behaviours (Biddle and Thomas,1966; Magnusson, 1981). This suggests that difficulties for new nurses might relate to their ability to meet role norms or expectations, thus fitting Clifford's (1995b) second area of polarisation. However, understanding the practice role can be aided by consideration of limitations, using Biddle and Thomas's (1966) illumination of environmental constraint. Further, evaluation of student perceptions of their developing involvement in registered practice may help to enable new nurses to acquire an effective role, thus suggesting the importance of understanding how roles develop (Clifford, 1995b).

However, review of the literature related to medicine administration has, to date, failed to comprehensively clarify a clinical practice role in medicine

administration. Research has focused upon a restrictive nursing practice in calculating medicine dosages and in identifying problems relating to incidence of error. Professional codes and employment policies further identify a regulation and constraint of the environment surrounding such practice. The small amount of empirical work that has considered work practice (Ridge and While 1995; Latter et al. 2000) as well as secondary polemic and instructive evidence suggests a wide-ranging and diverse skill based practice role, embedded within an organisational context of children's nursing.

The latter perspective suggests a theoretical definition of role in relation to medicine administration as inseparable from the situation that those undertaking it perceive it to be. Further, it may be notable for its diversity rather than its constraint if the evidence from Ridge and While (1995) has external validity between neonatal and paediatric settings. Relating the practice of medicine administration to the discussion about role thus leads to the tentative conclusion that the development of another polarisation of concepts may be important, but appears yet to be fully explored. This includes 'exploring' constructs related to examining the nature of existing practice roles and their interaction within the nursing environment. The inclusion of this third paradigm of 'determining role', using medicine administration as an example would serve to respond to Clifford's (1995b), requirement, by providing constructs to define nursing work. Examining a practice role by the activities that comprise it, could be one way in which this could be achieved. Role constructs in medicine administration practice that may be precluded, permitted or forced by nurses themselves, or indeed by the constraint of their environment would be illuminated. In order to use this information to

prepare nurses for medicine administration to children however, a model of role would be necessary.

Role as it is applied in nursing

To date, no evidence has been found that has considered the concept of role in developing children's nurse preparation. However, the most extensive review of the nature of role in nursing may certainly be attributed to Roy (Roy, 1970; Roy, 1984; Roy and Andrews, 1991; Roy and Andrews, 1999). Roy viewed the person as subject to two key principles, that of humanism; the recognition that individuals share in creative power, behave purposefully, not in a sequence of cause and effect, possess intrinsic holism and strive to maintain integrity. Secondly the philosophical principle of 'veritivity', that there is 'a purposefulness of human existence, and a unity of purpose of humankind, with activity and creativity for the common good and value and meaning of life (Andrews, 1991; p5).

Roy's model (Roy, 1970; Roy, 1984; Roy and Andrews, 1991; Roy and Andrews, 1999) is useful as it offers relevant operational definitions that contextualise medicine administration within the provision of children's nursing. These relate to her perceptions of the person or child and family, the goal of health, the context of the environment, and quality of nursing. Importantly, Roy focuses upon individuals and groups as holistic adaptive systems for which the sum is greater than the number of parts, and which are characterised by their interdependence upon each other. This notion of holism is recognised as important in seeking to understand children's nursing by reviewing the complex elements of practice and reflecting over their contribution to the 'definitely' greater whole (Carter, 2000).

Roy allows consideration of the dialectic nature of children's nursing by accepting the interdependence of systems that may impinge on the nurse's role. There is an assumption of unity in a common good and a similar assumption is identified to be common to children's nursing in the initial framework for enquiry (Figure 1). Here an organisational goal of children's nursing includes administering medicine safely as one component.

Roy defines 'roles' after the work of Parsons and Shils (1951) as functioning units of society that interact with one another, (thus following Mead's (1934) earlier interactionist perspective of role taking). She uses role as an adjective with which to define and elaborate a further concept of 'role function' as one of two social modes, (the other being related to self-concept). The mode of human role function is identified as concerned with an individual's position within society, and individuals are defined as having a basic underlying need for social integrity in order to perform effectively. (Andrews, 1991). Roles taken by individuals further have primary, secondary and tertiary status, and each of these are associated with expected instrumental and expressive behaviours (Parson and Shils, 1951).

Ineffective adaptation may occur within any part of the system, leading to an unhealthy state or imbalance (Roy and Andrews, 1991). Such balance cannot be restored or maintained without intervention. Again parallels can be drawn to the situation identified within this work. If a nurse failed to learn their practice effectively in preparation then they may be unable to maintain their integrity once registered. Equally, if the practice learnt in preparation was significantly different from that expected when registered then again imbalance would occur. There will

thus be challenges to effective role function. Without appropriate intervention, role failure may become apparent, either through role refusal or through error in practice.

Within Roy's definition, it would seem that the concern of nursing lies mostly within an individual's secondary role (that of being a nurse). The many tertiary roles further represent ways in which the individual might meet that obligation. In this scenario, the administration of medicine would thus be identified as a tertiary role in meeting the obligations of a secondary role of nursing. This is supported by the professional codes of conduct and standards already explored (UKCC, 1992a; 1992b; NMC, 2002a; 2002b), but literature concerned with defining medicine administration appears more inconclusive.

It is however, important to determine whether Roy's theory can be supported in practice. If the activities determining such a role are indeed consistent with the tertiary level (Roy, 1984; Roy and Andrews, 1991), then issues relating to barriers for achievement of tertiary roles may be applied directly, aiding understanding and development of medicine administration practice. Further, environmental features may also be relevant (Biddle and Thomas 1966).

In children's nursing, examination of work relating to role has concentrated on an organisational perspective related to Clifford's (1995b) first paradigm of role development *for* children's nurses and subscribes to a concept of role as being external to the individual performing it. This is rather than a consideration of existing roles *within* their practice. A nursing role cannot simply consist of a

series of delegated technical tasks, as a small part of the holistic care of an individual patient. Therefore it can be argued that if medicine is task based then it cannot be a role in practice (Casey et al. 2001). It is thus important to understand whether administering medicine is simply a contribution to medical work or a tertiary role in nursing practice. Determining this depends upon the definition of role that has been initially adopted.

Given the nature of nurse's role in medicine administration previously identified in this review, the view that administering a medicine is a task rather than a tertiary role is not supported. This becomes especially apparent when comparing similar nursing activities. Nurse prescribing is considered to be a role, because it requires nurse decision-making (Casey et al. 2001). By definition within the existing literature, administering medicine to children would appear to require nurse decision making too. There appears confusion as to the level at which roles may exist and the criteria that subscribe to the existence of a role in practice.

If a researched evaluation of the practice of the nurse in administering medicine concluded that it does indeed constitute a role rather than a collection of activities, then Roy's (1991) practical interpretation of role function offers a new perspective for nursing education. The application of role concept allows a potential means of being able to illuminate behaviours both independently by seeing action 'as it is', but also within a context, by seeing action as it is seen in both those who perform it and by others (Magnusson, 1981). In nursing practice, Roy's model of nursing has illuminated an application of role as a means of understanding how individuals may need to adapt in order to function effectively. Challenges to

effective role function are cited by Roy, who views the individual as one who needs to achieve role function in a variety of tertiary roles in order to meet the obligations of secondary ones. If medicine administration can be defined as a tertiary role, then elements required to meet the obligations of a secondary role would include those needed to ensure continued registration and practice of nurses. In this situation Roy's barriers to role function may offer a means for deeper understanding and pragmatic benefit in facilitating learners to achieve effective practice.

If the notion of role is not supported, then the discussion remains conceptual, related to the application of role theory as an alternative for illuminating practice activities and offering solutions. Nonetheless, the illumination of the types of activities offers an opportunity to clarify an area of nursing practice that at present is recognised as poorly defined (DOH, 1999). It will contribute to an understanding of operational nursing that has more widely been recognised as limited (Clifford, 1995b). For this work, greater clarity of practice is a necessary requirement in order to evaluate nurse preparation for medicine administration to children.

Whilst the concept of role is central to this study, understanding the construction of relationships between a practice role and the preparation for such practice requires a theoretical definition of competence and student learning. The nurse's ability to practice in a registered capacity is dependent upon their achievement of prescribed competencies. This is because defined competence acts as a formal gateway between pre-registration and qualification. The way in which nurses are

assessed to access this gateway is influenced by the theoretical debate that surrounds competence, and the understanding of these debates contributes to the interpretation of a means to evaluate preparation.

2.3 Theories of competence

Competence is embedded within a continuing theoretical debate in education that concerns the outcome of learning. In the simplest sense, most relevant for this work, these emanate from two major polarisations. The technical rationality model, epitomised by the notion of vocational competence in which practical skills are paramount, and the alternative social constructivist position that identifies the importance of contextually situated cognitive learning. This is developed within a reflective society epitomised by the skills of academy and the ability to transfer knowledge (Barnett, 1994; Bridges, 1996; Tolley and Murphy, 1998; Lum, 1999).

Elaboration of these differences in understanding competence has also taken place through professional debate within nursing education and it is not a new issue (Akinsanya, 1981; Benner, 1982; Miles, 1988; Ashworth and Morrison, 1991; Girot, 1993a; Girot, 1993b;). The debate has been fuelled by the increasing desire for the provision of students who can be seen to function effectively within today's employment environment and argument regarding whether it is valid to assess competence in relation to specific function in a context free way.

The technical rationality model is committed to observed effective operational performance (Storey, et al. 1995). Whilst there are several manifestations of competence within this model, there is an extreme point where competence equates to the skilled achievement of tasks within a particular working environment (Mansfield and Matthews, 1985). Within this definition, there is little evidence of a process of achieving competence and all emphasis is placed on the outcome or capacity to complete a job in an effective manner. It is recognised, however, that this may require more than simple completion of tasks in Mansfield and Matthews (1985) view, for they acknowledge the potential need for skills to enhance completion of tasks.

A strong contemporary influence in this area, is the development of National Vocational Qualifications (Jessop, 1991). Jessop suggests that the achievement of outcome statements is essential in determining competence. Some nurses have adopted this view enthusiastically as a means for determining practical achievement (Storey, et al.1995). Indeed, such an approach is attractive for its simplicity of evaluation, and also because it is easy to apply in clinical practice. However, reliance on this definition of competence alone is problematic, as the approach does not clearly take into account the learning process (Ashworth and Morrison, 1991). It therefore fails to determine how a professional has achieved their competence within a nursing context. This may be dangerously inflexible, if underpinning knowledge is lacking. Moreover, within education, the ability of those only required to achieve today's competencies to modify and change their practice in order to meet societies changing demands has been questioned (Barnett, 1994).

Such views would embrace a need for reflective practice and the integration of a more academic approach in determining competence. In response to these concerns, Phillips et al (1993) propose a 'process' mechanism in allowing students to demonstrate their competence in practice. Akinsanya (1981) and Eraut and Cole (1993) further suggest that by definition, competence is uniquely different from simple operational performance requiring underpinning knowledge and understanding as well as a need for personal skills and qualities and further cognitive processes.

However, in a manner set to add confusion rather than clarify the concept of role competence, professional nursing bodies do not particularly subscribe to any theoretical construct. Their definition appears to subscribe to Eraut's (1998) view that in common usage the term competence may be applied in two situations. The first is the notion of binary competence indicating that a person is either competent or they are not. This meaning of competence is usually ascribed within the behavioural technical rationality context discussed above. However, a second application of the term competence, which means 'adequate,' this appears to relate to the achievement of competence sufficient to qualify as a nurse (Eraut, 1998). This is supported by suggestions that a competent nurse as someone who is able to;

> ...*perform particular activities to prescribed standards.*
> (English National Board for Nursing Midwifery and Health Visiting, (ENB) 1993; Section 6.4)

> ...*practice safely and effectively without the need for direct supervision.*
> (UKCC, 1999 p35).

This form of competence is further illuminated as a measurement of appropriate quality for the transition of students of nursing to a registered role within the Nurses' Health Visitors and Midwives Rules (Rule 18a) (Statutory Instrument, 1983/873) and the new Nurse and Midwives Order (Statutory Instrument 2002/253). However, this type of competency is broad in nature and does not indicate the possibility of achieving different levels of competence, or indicate in what circumstances these may be relevant. Definition relies on local practical interpretation by teachers in relation to specific outcomes such as medicine administration. Verification of achievement of competence is therefore vicariously reliant on the student achieving outcomes included within their course that are validated by the professional and academic bodies. It is contended that where medicine administration is concerned, lack of specificity may fuel different expectations of practice at the point of qualification between education and practice. This may be particularly so, given the differences in interpretation of the practice role already identified within this review.

Finally, it is important to differentiate between specific individual competencies, and a broader conceptual understanding of competence to perform within a role (Eraut, 1998). This is particularly important within medicine administration when one considers the parameters of practice. Administering medicine in pre-registration practice comprises many activities; some of these are amenable to specific behavioural identification whilst some are not. Administering medicine via a naso-gastric tube or administering nebulised medicine may be defined specifically in terms of safe behaviour. However, communicating effectively to

achieve a successful administration of these may require more complex consideration of the individual's manner and professional approach. Assessment must, in this case recognise an essential situational relationship between competence and the learning environment (Phillips et al. 2001). However, if this point is taken literally, then the opportunity to move forward and identify missing operational practice within nursing would never be taken (Clifford, 1995b).

It is important to establish whether it is possible to communicate medicine administration practice assuming that there is a socially constructed learning context, or to suggest such a degree of situation that communication of practice across situations is not possible. Indeed, Philips et al. (2001) contradict themselves on this point when they review perceptions of assessed competence. They suggest that nurses see competence without level and further, they do not see advancement of clinical level after qualification, rather a broadening of knowledge using a range of usual experiences and a few unusual ones. This would tend to suggest that even though competence may be contextually situated, it might also be transferable, and thus simply communicable. This conclusion is adopted by the National Committee of Inquiry into Higher Education (1997) in relation to key skills, and enjoys support within the NVQ movement. Within this research, this is important as students could express their involvement in such activities if a method were devised to enable it. This would allow consideration of how students perceive their involvement as compared to activities comprising registered practice. Areas of low involvement could be appraised and teaching and learning experiences adapted accordingly. A research methodology that allowed the development of an inventory to define key activities in a registered role in

administering medicine would therefore seem logical. However, it is important to ensure that registered nurses saw such an inventory as being transferable. In order to achieve competence requires the preparation of learners to achieve such standards and thus the final theoretical concept of interest to this work is that of learning, as it relates to student nurses.

2.4 Preparing Nurses - Facilitating Learning

Curriculum delivery within nursing education in the study school subscribes to the notion of facilitating the adult learner, based on a theory of androgogy (Knowles, 1978; 1990). This has been operationalised through the use of Lawton's cultural curriculum adapted for nursing by Gilling (1989). The role of the teacher is primarily concerned with the facilitation of a curriculum that is accessible and enables learning on an individual basis rather than the notion of teaching suggested by a more pedagogical stance. This implies a need to consider the position of student learning in order to achieve competent practice once registered. Although *what* experiences are provided is important, determining the effectiveness of such experience is also important.

Rogers (1986) summarises the work of learning theorists succinctly. Critically, he identifies a fundamental difference between learning theories related to human communications that link people together into an organisation to achieve a common purpose that may be externally determined (Behaviourist theories), and theories that focus on the interaction of the individual and their environment (Social learning theories). A third group, to which the study school suggests that

it subscribes, are 'humanistic psychology theories' (Quinn, 2000). These focus upon the learner and their ability to gain from facilitated experience.

No evidence has been identified that indicates how individuals learn specifically in relation to medicine administration. However Eraut et al. (1995) propose that student nurses' practical experience begins with being told what to do, and they acquire credibility through doing what they see others do, thus ascribing to a behaviourist perspective. Theory, it is further contended, is something that learners cannot use until they have acquired experience and seniority, thus, for novice learners, theory is irrelevant to current practice (Eraut et al. 1995). Benner (1984) acknowledges a similar stance, suggesting that novices in any aspect need maps to guide their practice and simply learn to practice by taught rules. This would seem to suggest a rather behaviourist approach and within contemporary nursing education it is relevant to observe that the value of simply learning actions has been challenged. Nonetheless, it is suggested that such learning may be important as a first stage in a developing process of learning that subsequently requires reflection and critical appraisal of feelings by individuals as they become more active in their learning (Schon, 1987; Johns, 2000; Rolfe, 2001).

Rogers (1986; p53) identifies an important potential contribution of personality theory in determining perceptions of learning. He suggests;

> *One main area of agreement (between theorists) is the distribution of personality types along a spectrum of some kind or another- between the extrovert and the introvert, for instance or between those who see the locus of control as within themselves and those who see it as outside of themselves.*

Personality type is relevant because of the potential effects on practice related to administering medicine. If students see the locus of control within themselves, then they are more likely to seek out appropriate practice within medicine administration even if they find the learning challenging and the theory potentially difficult to incorporate. However, if the student expects that their ability to practice is dependent upon external controls (including the way they may perceive themselves to be viewed by their assessors), they are less likely to be confident and more likely to expect failure (Rotter, 1972). Bandura (1989) also recognises this as important when he discusses a theory of self-efficacy. In summarising his work, Summerfield (1995) identified that people can exert some influence over their life paths by selecting or creating their environment. She comments:

> *People choose social environments that they judge themselves to be capable of handling, thus limiting or enhancing their development in that the social influences operating in certain environments continue to promote certain competencies values and interests long after the decisional determinant has rendered its inaugurating effect.* (Summerfield, 1995; p39)

Within medicine administration, learning has been previously determined through assessments that are externally observed (achievement of practice outcomes to a required standard) (GNC, 1969). Latterly the use of broad practice outcomes has still continued to emphasise assessment by others (ENB, 1990) albeit through continuous assessment. Little emphasis has been placed upon the effects of internal factors, or personality traits that may enable or inhibit learning, and ultimately effective practice. Indeed, the response of the student in relation to their capacity to become involved in medicine administration within this school has only been sought as part of a summative self-assessment. In this situation the

student risks failing the outcome if they suggest that they are not confident. Further, if Summerfield's (1995) above point is taken, then this could have a lasting impact. Since the ultimate outcome of failure may be discontinuation from the course of study, it is reasonable to assume that some students may be unlikely to declare their reservations in practice, if their work place assessor determined them to be competent. Summerfield's (1995) research has some relevance for this work because she proposes à means to understand personality and attainment that can accommodate the achievement of outcomes without sacrificing the acknowledgement of contextual features.

It appears that the curriculum ideology for facilitating theoretical learning by adult learners may be different from one that can facilitate practice learning, particularly when the learners are novices. If the expectation were that students should be able to gain learning adequately from the practice experiences offered and yet feel unable to learn without more direct teaching, then this could lead to a breakdown in their ability to gain and use knowledge effectively. Moreover, the complex nature of nursing responsibility in administering medicine to children means that new nurses have to advocate for children and may have to make challenging practical decisions, which require both competence and professional confidence. If students are acknowledged as being competent, but still not perceiving themselves as being professionally confident to be involved in practice, they might find the nature of medicine administration in registered practice overwhelming. This can be particularly illustrated by examining contemporary issues, especially those relating to promoting children's rights for equity of treatment.

Achieving equity in health care is problematic because children are reliant upon adults for their access to medicine, and some children fail to receive treatment when they require it. An example may relate to immunisations, where press coverage may distort the public perception of risk and benefit of treatment. Children may also not receive required treatments through their parent's poor understanding or lack of compliance, or through a political failure to ensure adequate access to health services (United Nations, 1995; Guy, 1998). The responsibility of children's nurses in medicine administration must thus include the provision of accurate and accessible information and education for families, to ensure children receive the most appropriate treatment. Knowledge and skills to understand and communicate such information effectively is a paramount requirement and nurses must be able to access and question evidence and make decisions to support their practice.

There are also particular issues regarding treatment with medicines that are unlicensed, or used in an off-label way (outside of licensing instructions) (Choonara and Dunne, 1998; Moules and Ramsey, 1998; Aynsley-Green, et al. 2000). For nurses, the protection of a child's right to safe and effective treatment must be respected according to the Code of Conduct (UKCC, 1992a; NMC, 2002a), and within the UN Convention of the Rights of the Child (1989). In order to ensure safety, and to respect human rights, medicines must be licensed for the age group prescribed. However, this has been wilfully ignored by some responsible for the manufacture, prescription and dispensing of medicines. Aynsley-Green et al. (2000) suggest that 50% of drugs given to children in general hospitals, 60% given in specialist centres and 90% given to seriously ill

neonates are not licensed for use in childhood. These figures are broadly comparable to the claims of others. Choonara (1998) identified that 40% of medications given to children are administered outside of the product licence.

For prescribers, the absence of a licensed alternative presents a dilemma. In some situations the choice of treatment may be an unlicensed medicine or nothing. Further, where treatment is needed and a medicine has been used successfully in an innovative way then the doctor may justify their decision to prescribe in an off-label or unlicensed medicine in offering quality care. (Off-label use of analgesia is just one example (Conroy and Peden, 2001). For the nurse, whose role is to advocate for children, there is an inevitable conflict. Should children receive a treatment that has no safeguards set up to protect them, or should nurses refuse to participate in this aspect of medicine administration and thus the child may not receive necessary treatment? According to Guidelines for Administration of Medicines (NMC, 2002b) responsibility for off label and unlicensed medicine is placed with the prescriber. Nurses however, are often responsible for obtaining informed consent for such treatment, and may be prescribing. This is therefore, an important consideration in advising children and their families. With greater access to information, families are also no longer passive recipients of health care. Nurses need to be able to inform families, and to achieve this they must be critically aware of current issues. For this research specifically, it is relevant to understand what extent these issues impinge upon medicine administration for nurses in practice and if they do, whether students are prepared to become a part of this challenging environment.

Nurse preparation

Within nurse education, the way children might be nursed, by whom, and with what preparation has been continuously debated. This has been the case throughout the development of the profession (ENB, 1988; DOH, 1991; Audit Commission, 1993; House of Commons Select Committee, 1997; UKCC, 1999). In medicine administration specifically, requirements for qualifying practice have changed.

The theoretical component of the Diploma in Nursing course within this study is front-loaded into the first part of the programme, and locally, the detail of nurse education programmes is derived incrementally. Educators, clinical practitioners and service managers attend curriculum development meetings as representatives of their profession and make contributions to the ongoing development of the curriculum. The main strength of this method is that the curriculum is prescribed in relation to local as well as national need, and evaluations by student nurses completing theory modules are received and acted upon rapidly. However, there are difficulties with such a system. A major potential weakness lies in the fact that individual sessions are taught by nurse teachers who seek to define a broad course outline into much finer detail for teaching outcomes within sessions.

At the time this research commenced, the Diploma programme had no requirement for teaching plans relating to individual teaching sessions to be made available for scrutiny, these remained the property of individual teachers. Since this evaluation took place, the development of inspection by the Quality Assurance Agency for Higher Education through subject review of courses (1998), has meant changes to

the above arrangement resulting in session outlines made public, and also further scrutiny of some individual sessions via peer review. However, teachers' plans still remain open to interpretation upon presentation. The nurse teacher judges what is deemed appropriate for inclusion also at each session. Whilst it is assumed that teachers maintain professional integrity, by updating their skills and knowledge related to practice, it is identified as a problem that nurse educators are unable to practice in the clinical areas for many reasons (Day, et al.1998).

Indeed, even without levelling this criticism at teachers of medicine administration, there is another issue to consider. Teachers necessarily aim to facilitate the understanding of broad principles. These traverse trust specific policies and are generalised to a large number of different practice areas. However, this may not be fully appreciated by students in preparation, and thus may manifest as a difference between their learning in theory and their practical experience. A seamless transition of knowledge related to medicine administration applied in practice thus cannot be assumed without further exploration.

One could argue that differences between theory and practice relationships would be identified within student evaluations and thus determined in a post-hoc manner. However, such an assumption relies upon students realising what it is that they do not know, and what components have been deemed appropriate for inclusion in a course that encourages adult learning. Knowles (1990) accedes that in spite of promoting a theory of androgogy, this may not be appropriate for all learners. He cites new learners as being in need of being taught as they are not necessarily aware of what it is they need to know. The front-loading of theory is also

problematic if one applies Knowles' (1990) androgogy. The student's orientation to learning might not be present and students would not understand the relevance of the theory. This is because they would be unable to apply the sociological perspectives in practice and so may not be ready to learn at this point. Upon later qualification the need for understanding such perspectives may be present, but the learning is but a distant memory, of little practical use, thus leaving nurses feeling ill-prepared (Eraut et al. 1995). In order to review such a conclusion however, it would be important to evaluate students perceptions regarding to what extent, they are prepared to become involved in practice, and how this relates to the taught material they have received.

Evidence of empirical evaluation of nurse preparation for medicine administration practice is limited, but an area that has received much empirical review relates to nurses ability to calculate medicine doses. Global literature suggests that both registered nurses and nursing students may suffer deficiencies in this vital part of their role, (Bayne and Bindler, 1984; Bayne and Bindler, 1988; Pirie, 1987;Eaton, 1989; Fulton and O'Neill, 1989; Adams and Duffield, 1991; Wilkinson, 1991; Miller, 1992; Miller, 1993; Hek, 1994; Kapborg, 1995). The key elements of relevance to this work can be summarised.

Within the literature attempts have been made to:

- **Clarify the existence, extent and impact of nurse's deficiency in calculation skills in relation to the practice of nursing** (Eaton 1989;

Miller 1992; Miller, 1993; Hek, 1994; Koren et al. 1983; Koren et al. 1986; Hutton, 1998b).

- **Identify causes for poor ability in mathematics** (Tobias, 1978; Hendel and Davis, 1978; Pirie, 1987; Fulton and O'Neill, 1989; Kapborg, 1995; Hutton, 1998a; Hilton, 1999; School Curriculum and Assessment Authority, 1996; Department of Education and Employment, 1998; 1999)
- **Reduce or resolve problems associated with nurse's ability to calculate (including testing).** (Bayne and Bindler, 1984; Koren et al. 1986; Pirie, 1987; Conti and Beare, 1988; Worrell and Hodson, 1989; Ludwig-Beymer et al 1990, Glanville,1992 Segatore et al 1993; Miller 1993; Hek, 1994; Kapborg, 1995; Trigg and Fox, 1996; Hutton 1998b; Tarnow and Werst, 2000)
- **Develop skills to administer medicines effectively by the use of an evaluated intervention.** (Keighley 1984; Ignataviticius and Naumann, 1984; Whittaker 1987; Lowery 1988; Shockley and McGurn, 1989; Blue, 1989; Connor and Tillman, 1990; Wong, 1990; Blais and Bath 1992; Gilbert and Kolacz, 1993; Flynn and Wolf, 1996; Tarnow and Werst, 2000; Kapborg, 2001).

Review of the above evidence produced the following conclusions. There is an acknowledged problem associated with poor mathematical ability of school leavers in the UK as well as other developed countries. Although the government committed 60 million pounds to its national numeracy strategy (Department of Education and Employment, 1999), in the short term nursing will still recruit from

a pool of school leavers and mature learners who may have limited benefit from this initiative. This is important because nurses' previous experience and current ability are indicative of their future ability to calculate medicines (Kapborg, 1995; Hutton, 1998a; Hilton, 1999).

A nurse's role in practice includes making difficult decisions about children's capacity to understand their treatment. Nurses need to be prepared to respond to individual needs against a potentially conflicting professional and legal background. Means to determine functional competence in practice at qualification as well as effective role transition should be examined closely, for current evidence surrounding the complexities of the nurse's responsibilities in relation to administering medicine to children include elements that may challenge practitioners. However, to address learning and competence within preparation for role is insufficient unless there is some examination of how all of these are theoretically and practically related.

Benner's (1984) model has been one framework for practically illuminating achievement of competent practice in the preparation of student nurses. It is an important theory for this work, because of its use in the curriculum developed within the university where this research was undertaken. A critique of the Benner model in light of the theoretical discussion already concluded in relation to the concept of role, and the theories surrounding competence and competence serves as a starting point for this work by enabling a vision of strengths and limitations of the current system.

The Benner Model – A Critique

Benner (1984) has been influential within the development of curriculum, in attempting to define a learning process from the novice to expert nurse. In Benner's view the use of the technical rationalist approach that supported 'operational competency' style assessment within nursing practice was incompatible with developing an expert understanding of the holistic nature of practice that cannot be reduced to component parts. Drawing from theorists such as Heidegger (1962) and Polyani (1958) and dominantly Dreyfus and Dreyfus (1980), Benner's search for new ways of defining practice competency in nursing culminated in her model espoused within "From Novice to Expert".

This work was published just before the UKCC began an extensive review of nursing education provision. It identified many practice features considered desirable within a new education led curriculum and offered a theoretical underpinning (Cash, 1995). The model was widely accepted by many schools of nursing in Britain as a basis for a practice assessment strategy (English, 1993).

However, despite this acceptance, Benner's (1984) model has received criticism, and this is a relevant consideration when attempting to determine a construct of preparation for competence. First, in defining the concept of an 'expert', Benner criticises those concentrating on operational competence as failing to observe and clarify the whole. Benner (1982 p304) complained, "...the content and practices inherent in the competency are omitted." Benner's work has also been criticised for lacking clarity and specificity (English, 1993). Benner defines expert practice as that which employs 'intuition' and thus also offers an unclear perception,

through allowing the greater concept of intuitive practice to remain undefined. Secondly, the acknowledgement of a concept of intuitive practice as being an acceptable reason for experts not to be able to explain their practice has also been challenged (English, 1993; Greenwood and King, 1995).

In a study of Australian orthopaedic nurses, Greenwood and King (1995) analysed verbal protocols and found that experts and novices used similar levels of concepts, both of which were based around a medical model of health care. One must accept the external validity of these findings with some caution as the research was conducted within a different culture from Benner, and included only nine pairs of nurses from a specific aspect of clinical practice. However, the work serves to identify a need for further empirical examination of Benner's concepts. To what extent experts can act as role models for students must also be questioned if they are not able to explain their practice. If Benner's perception of those able to articulate their practice is accepted however, any evaluation of nursing should incorporate the views of those still able to articulate their reasoning, thus those described by Benner as competent.

A further difficulty in using Benner's framework to define nurse preparation for competence relates to interpreting it in relation to the practices of pre-registration nursing students. Indeed Benner bases her work mainly on the registered nurse in practice and is much more reticent about learners. This is perhaps unsurprising as she offers no research evidence of her own to support her theories in relation to undergraduate nurses, and simply summarises the work of others.

The relevance of Benner's (1984) model to the pre-registration nursing curriculum is thus questionable, yet interestingly this is where her model was most enthusiastically adopted. This acceptance is problematic, as only part of the model could ever be used. Student nurses could not achieve Benner's competent practice by definition, because these were the actions of individuals who had worked in one place or similar placements for several years. Students within the Diploma course typically have diversity in short placements and so do not achieve this criterion. In the study school of nursing, the Benner model was subject to research evaluation by Hancock (1994). Hancock found that the broad nature of terminology used was difficult for practitioners to understand and the notion that beginners should be observers was interpreted literally. Assessors reported that the students failed to become practically involved whilst in placement, and found difficulty in completing documentation for the students.

The model assumes an approach that considers self and being after Heidegger (1962). This is clearly attempting to use the internal aspects of the learning process as well as external features, which is a strength of the model. Benner's approach to assessment used critical incident evaluations to encourage registered nurses to consider themselves in relation to their competence in practice. Illumination of these critical incidents thus allowed the assessor to determine competent practice and consider development. This could be used with experienced nurses who could determine the relevance of their position in relation to the ascribed competence through the discussion of critical incidents. The registered nurses would be doing this as part of their development and not in order to achieve a qualification, and would have many critical incidents to draw upon. However, such an assessment

may be difficult to achieve within early student practice, because the relevance of action in nursing activities may not be fully understood. This would especially be the case where students were attending short placements in a range of very different places.

In the School of Nursing used in this study, Benner's model was incorporated into the student practice assessment by determining a broad framework of 'competent practices' that could be achieved in any area (the external component). Students were then asked to self assess before seeing their assessors (the internal component). The two assessments could then be discussed and a mutual grade agreed. However, this 'bolt on' approach to assessment is difficult. It assumes that students understand the nature of such broad competencies, in relation to their own levels of competence in that specific area of practice. Benner offers little direction for the analysis of evidence, other than the critical incidents that she uses as examples. She accepts a need for models or maps to guide beginners but warns that these can act as a substitute for personal knowledge if they become too specific.

Adoption of the Benner model also assumes that students wish to discuss weaknesses that may have not been observed, when they are being assessed summatively. It is conversely proposed in light of Summerfield's (1995) discussion of self-efficacy, that students may want to appear successful, and practitioners may not have strong feelings about a single student's assessment unless they were deemed unsafe. . The part of the assessor and the assessed could potentially be inverted without any realisation on the part of the players, if the

student self-assessed optimistically, and the assessor acquiesced, both believing that the student had achieved a broad outcome, without evaluating specific evidence. Differences in perceptions of role between players are not uncommon (Forte, 1998).

An alternative may be to consider a model that more specifically addresses student involvement within the practice role. The definition of role can be seen as fundamental to understanding how an individual may perceive expectation to perform as well as to be seen to be performing.

2.5 Conclusion

Review of the above literature suggests that the successful practice of administering a medicine relies on a range of theories. Student learning, their competence, and indeed the process that is needed in facilitating preparation to achieve competent behaviour are all important. Additionally, practice as perceived by the individual and by those observing them is a relevant consideration. When appraising the threads of each of these that join to create a theoretical underpinning for this work, several features become evident. First, that despite the complexity of each of the different components, they are all striving to achieve a similar goal, namely that of safety and quality. This may relate to;

- Provision of Education.
- Assessment of competence.
- Evaluation of the effectiveness of practice roles and systems

Ultimately effective role function in administering medicine can then be seen as an outcome of a process of quality control, aimed at ensuring the best provision of care for a child and their family. To return to the beginning of Chapter One of this work,

> *...the value of doing good and avoiding harm operates implicitly as nurses administer drugs*...(Wolf, 1989; p8).

In medicine administration, it is proposed that the process of understanding the pragmatic components of each part of this process are lacking in clarity because the impact of change in all areas has culminated in an uncertain picture and because nursing has not evaluated this aspect specifically. Without this integrated information, those responsible for implementing each of the concepts identified within the framework for enquiry assume that each is performing adequately and that the system of preparing nurses for a role in practice of administering medicine to children is effective. It is only indicated otherwise when an increase in unacceptable incidents points to a need for review. This crisis-managed perspective does not look forward to how the relationships between educators, students and service personnel can work together to enhance practice through the development of greater understanding of preparation for practice. Evaluation of each of these perspectives has offered a direction for the development of this research.

In summary, administration of medicine can be defined either as a series of activities or tasks that constitute a part of a greater role of nursing. These are free

of context, although guidance can influence individual performance. Alternatively, it may be defined as a holistic role in itself that underpins nursing as well as fundamentally incorporating this nursing context. It could thus be viewed as context driven. Adoption of either of these positions could have useful implications in offering approaches for the preparation of student nurses.

It is finally possible to propose that medicine administration is, in fact, both of these, and neither are mutually exclusive. There is a need to follow the rules in terms of the achievement of safe practice, but a wider role of medicine administration must operate contextually. However, when the concept of role is applied to aid clarity of definition, it is difficult to provide an answer! This is because the concept of role and its application in relation to the everyday practice of nursing is recognised as deeply contextual (Biddle and Thomas, 1966) but it is not defined well (Clifford,1995b). In medicine administration, in spite of a wealth of governing regulations and discursive opinion, empirical detail regarding the nature of everyday practice is limited. Indeed, without such clarity it is difficult to see how learners can begin to learn about their future role in practice. This suggests a need to map contemporary practice in a way that may be communicated:

> *The first aim of this research is therefore to identify activities that comprise the role of registered nurses in administering medicine to children.*

Yet it is not this simple, a difficulty with defining such practice lies within the complex situational environment of which it is a part. To map such a role in

practice must acknowledge such a context, and yet be able to traverse it, in order to be communicable to others in a meaningful way. For this work the defining of such a practice role must take account of such complexities sensitively, allowing practitioners to conclude a definition of their practice as they see it.

Following Benner's (1984) work, it is proposed that the use of interviews can allow nurses to outline their practice and activities drawn from these interviews can be verified both by the interviewees themselves. A further measure might be to offer the analysis to panel of nurses who could determine external validity.

A review of competence and the processes by which to achieve it within UK nursing courses, suggests that there is no longer a certain means of testing ability specifically related to medicine administration. However, a strategy for achievement is evident and this includes the responsibility of the institution to deliver a course that is validated both professionally and academically. This mechanism serves to ensure that nurse preparation is providing nurses who are, by definition, 'fit for professional practice' and 'fit for academic award', and thus subscribe to the UKCC's (1999) requirements. This leaves a third consideration and this is 'fitness for purpose'. Are nurses completing a course of study that adequately prepares them to practice in a contemporary health care setting?

Evaluation of student perceptions of their practice involvement in medicine administration would offer new knowledge about whether this nursing programme, (and the theories it embraces) provides future practitioners who perceive themselves as being practically able to be involved in practice as a

registered nurse. It is proposed that demonstrating competent behaviour in practice would be insufficient if students feel role distance or conflict related to some activities that influenced future practice. Further, evaluating student involvement in practice activities could offer indicators regarding those students who may be vulnerable. Intrinsic factors such as gender and personality and past experience may also influence their perceptions and create dissonance. These have been identified in relation to the calculation of medicine doses (Pirie, 1987; Fulton and O'Neill, 1989; Kapborg, 1995) but the impact on nurse involvement in medicine administration has not been evaluated.

If some students are vulnerable to role failure, education may be tailored in order to meet their needs. Evaluation of student perceptions is therefore an important step to determining effective involvement in future practice. Such an evaluation may offer insights specifically into areas that students might find it difficult to become involved and allow the development of strategies to enhance learning in this area. In order for students to administer medicine to children optimally, it is essential that they know what to aim for in terms of best practice, and understand how they perceive their developing involvement.

A second aim is therefore to evaluate student perceptions of their involvement in administering medicine as compared to activities comprising the role of the registered nurse and with the provision of preparation in one diploma course.

In reviewing how this may be achieved, the following studies offer particular relevance for this work. Youngman et al.(1988) studied the role involvement of nurses and technicians in high dependency areas. They identified nursing

involvement in role by individual perceptions of their practice by using an activity inventory approach. This work simply focused upon the overlap of roles as described by the two groups, using cluster analysis to compare the percentage of overlap. Stock and Ball (1992) used activities identified by Youngman et al. (1988) in a further study on the same subject. This time activities were analysed using a different multi-variate analysis technique (multidimensional scalogram analysis) in order to group the activities according to the respondent's perceptions of their similarity. These studies demonstrate the potential of using multivariate analysis to describe and group the perceptions of individuals.

Finally, Summerfield (1995) employed multivariate analysis techniques in determining the relationship between academic self-concept, attainment and personality in 16-19 year olds. Emerging from a background of social learning theory, this work derived a number of sub-scales that facilitated the comparison of personality and attainment in the study subjects through the use of cluster analysis and individual item analysis. She classified students into identifiable types according to their personality and their attainment and used profiles to describe typical group members and identify differences between them. Whilst recognising the limitations of this case study in terms of the total achievement of her initial aims, Summerfield's (1995) work has relevance to this study since the age group she examined was sixth form, and thus in the year prior to higher education entry. Although there is a mixed age entry, nursing still draws from a pool of school leavers and further, academically the higher education diploma follows the educational level in Summerfield's sample. Her key findings, that previous attainment seemed to be the most influential factor in future attainment,

and that personality exerted a substantial effect on performance independent of ability, will merit discussion in light of this study.

The theory 'in use' within nursing education at the commencement of this work, was primarily that of Knowles' (1978, 1990) theory of adult learning. However, there is inconsistency between the delivery of the curriculum as identified within UKCC (1986) guidelines, which identify that theory should be front loaded into the nursing course, and a theory of androgogy as defined by Knowles, (1984). Knowles suggests a need for adult learners to have learning that is orientated and relevant in order to justify their need to learn it.

Eraut et al (1995) also criticised this aspect of the curriculum, suggesting that the lack of opportunity to practice and to socialise within the role of the nurse meant that students were not able to use their learning. Within medicine administration, there is little evidence that has evaluated pre-registration preparation for practice. Exceptions include work relating to student recruitment and to the improvement of mathematical knowledge. (Bindler and Bayne, 1984; Blais and Bath, 1992; Hek, 1994; Kapborg, 1995). There are also evaluations that have compared the effectiveness of new teaching methods, (such as computer assisted learning), with more conventional teaching. It is pertinent to point out that none of these studies specifically made any comparison of the preparation with an empirically defined registered practice role. The third and fourth aims of this work are therefore:

To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one Diploma in Nursing Curriculum.

To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

In considering how this might be achieved, recourse to other empirical literature is useful. A study relevant for this work in relation to reviewing curriculum is that of Eraut et al (1995). These researchers evaluated the contribution of the biological, behavioural and social sciences to pre-registration nursing and midwifery programmes. Although focused upon adult and mental health branches and not considering children's nursing, their conclusions and recommendations are directly related within the context of nursing and the Diploma in Nursing. The work, which concentrates on the way theoretical knowledge contributes to nursing practice concluded that theoretical contributions from the curriculum were not being realised in practice because there was;

- Little mediation of theory in service settings
- Lack of clarity about whether learning objectives were being facilitated in education settings, in service settings or in both
- Insufficient provision for mediation in the curriculum plan; important links might be omitted, too little time might be allocated, the group size and setting for teaching might be inappropriate for this purpose.
- Inappropriate teaching, which did not achieve the envisaged range of purposes; this could indicate a staff allocation or a staff development problem.

Clearly, each one of these elements may contribute to disparity between theory and practice for learner nurses in relation to medicine administration and it is important to consider them in relation to this work. Eraut et al.(1995) further include a framework for consideration of the Diploma in Nursing curriculum, which offers structure for the review of teaching within this research.

Whilst the concluding discussion has provided an underpinning theoretical framework that supports the first four aims of this study, it remains unable to offer a model that is inclusive in seeing the whole as greater than then sum of its parts. However, for the achievement of the fifth aim, the notion of an integrated strategy for enhancing nurse preparation in administering medicine to children is clearly important in meeting the ultimate organisational goals of children's nursing as a holistic and inclusive care provision for children and their families.

Using Roy's Model in this research

Roy's model has been used to enable clarity of definition of concepts related to individual performance to be used in an operational way. Roy's model includes determination of self-concept, and individual perception, but within the literature review it has been identified that performance of any role is also contingent upon how an 'actor' is viewed by others (Goffmann, 1959). This is consistent with Roy's view of learning as she espouses cognitive learning theory based on the cognitive and affective domains. Learning theories emphasise both external and internal factors that may influence learning and assessment (Rogers, 1986). In terms of educational provision in nursing this is an essential feature, since current

assessment procedures are based upon the achievement of practical competence that is mostly externally assessed by registered 'others'.

Although Roy's model was primarily designed for nursing patients, it might have potential benefits for curriculum development. Indeed, as illustrated above, a notion of balance can equally be applied to preparation for a practice role. Within the aims of this work, there is a need to evaluate the nature of a nursing practice role in administering medicine to children. There is also a need to ascertain student nurse involvement in such practice. This means considering the features and characteristics required by students in achieving successful role transition, and also understanding aspects of practice which students' perceive as problematic in their achievement.

However, whilst Roy's model offers a means to operationally define concepts that relate to role function, it's use in guiding the pragmatic direction of the research methodology is limited to its fundamental philosophical premises. This is because it is untested in UK nurse education in relation to the consideration of the student as its central focus and thus no model was found that could be adopted as a framework. As already shown within this review, the exploration of the relational nature of the concept of role with preparation and the development of competence in medicine administration is paramount. Indeed, evaluation of the existing relationships underpinning theoretical concepts has already created a means for the progression of this work.

In Chapter Three, the philosophical standpoints taken in this work will be defined and discussed in greater detail, to offer a rationale for the research design finally used. Throughout the empirical chapters, the literature will be referenced as it becomes relevant, and in the discussion chapter the contribution of Roy (in proposing a strategy for enhancing practice development) will be evaluated alongside the existing Benner model for assessing student competence. The final discussion will facilitate a structure for the achievement of the fifth aim of this work;

> *To propose a strategy for preparation that could enhance role function for nurses in administering medicine to children.*

3 Chapter Three – Developing a Research Design

3.1 A Philosophical Rationale

> *Although qualitative and quantitative are frequently used in supposedly lucid, precise and unambiguous terms, a number of methodologists have pointed out that the qualitative–quantitative distinction is inexact and somewhat artificial.* (Goodwin and Goodwin,1999; p54)

Initial deliberation from the review of the literature highlighted some tensions in viewing medicine administration as being context driven or context free. As such, there are many idiosyncrasies in what may be required to meet the aims of this work. In some respects there is a need for an exploratory study, as understanding the nature of nursing work in registered practice is an essential baseline criteria for success in role function. It is also important to discover stimuli that may enhance or impede newly registered nurses' capacity to achieve effective transition. However, the aims of the work also suggest a need to consider activities that can be viewed in an objective manner and communicated without context. This makes it difficult to accommodate when reviewing philosophical positions, since the traditional research polarities would demand an acceptance of either an objective, context free position, or a subjective, context driven one.

Evaluation through use of case study, however, may offer a means to resolve this problem, and as discussed eloquently by Stenhouse (1980; p1) establish some "...logical relationships across the cloven heads (of qualitative and quantitative research) in order to determine reflective discourse rather than competitive banter." Whilst it is intended to justify the position concluded within this work

by participating in a little competitive banter, it is evident that by performing an evaluation, it is possible to accommodate either philosophical standpoint (Patton, 1990; Cronbach, 1982; Greene, 1994).

Consideration of a Qualitative Approach

Using this research paradigm could enable the discovery of phenomena and understand the experiences of nurses in administering medicine to children. An inductive approach would generate theoretical perspectives relating to medicine administration in practice for children's nurses. Such a paradigm would also be congruent with Roy's (Roy and Andrews, 1999) work in that she considers assessment using her model would best be achieved inductively, thus considering a 'process of health' (Myers and Haase, 1999).

Phenomenology may allow consideration of the 'lived' experience of nurses administering medicine to children. Theory would be then be generated which includes and embraces the context of such practice. Understanding the students' perceptions of their experience of learning about medicine administration in preparation for practice would also offer insight. The effectiveness of the diploma course in ensuring adequate preparation could be evaluated through comparison of data generated from the registered nurses and the students interviewed. Purposive selection of students and staff can ensure a range of experience is addressed.

However, difficulties with this proposal relate to the inevitable deeply contextual nature of medicine administration. Practices are grounded within different

professional and educational perspectives, as well as being bound by local policies. Nurses within various hospital and community settings administer medicines. Each may have different contextual justification for why specific aspects of their practice may be determined. For example, in a large hospital local policy may demand that two registered nurses check all medicine for children. However, in the community setting where nurses may work alone in patient's homes this may be practically and economically impossible to achieve. Such variations are pertinent. However, to investigate these qualitatively may send the researcher upon an expedition that is so concentrated upon discovering the uniqueness of these experiences that they become 'a tourist' as described by Silverman (1993). They are intent upon identifying 'out of the way sights' which justify differences between contexts rather than considering what circumstances these differences may or may not be relevant. It is important to recognise that although context cannot be ignored, it is initially essential for the aims of this work to consider whether a role in medicine administration can be concluded at all. Further, can it be described by activities that comprise it, with or without context? In depth examination of different contexts is not paramount, because this work is simply concerned with whether activities may or may not normally be considered part of nursing work. If they are, then they form a part of the role criterion, against which pre-registration preparation may be examined. If not, then these aspects should require post registration consideration by the small numbers of units employing such practices.

Nurses are reminded within 'Guidelines for Professional Practice' of the need to receive appropriate preparation for roles that they may undertake (UKCC, 1996).

The task of this work is to determine whether practices are as diverse as this, which would imply a highly different set of practices in different settings. Alternatively, a core of generic practice may be found. To do this, however, nurses representing different settings would need to be interviewed.

Next, caring for children is an individualised process, where each child is unique. One can thus assume that each experience of medicine administration is also subject to different focal stimuli that may cause variations in justification for performance. The way that a frightened toddler in the accident department may behave when being offered pain relief may be entirely different from an older child after planned surgery, who understands their disease and the need for treatment.

In facilitating education for students it is important to appreciate an overview of such contexts, and examine considerations of major principles for practice. However, whilst the use of case studies can be illuminating, an in-depth examination of every individual situation would be impossible and undesirable within a classroom setting. This is particularly pertinent when students within the same class are supported by different workforce confederations and are working within different healthcare trusts. It is more practical to teach principles of practice than to focus too much on individual trust policy differences, but this must also be effective. The teacher must be concerned with *what* is done in practice and *how* it is achieved. A further role of the teacher is to facilitate the student to speculate, explore and rationalise practice. This is addressed through a range of experiences as part development of their whole understanding. In

registered practice, it is this whole understanding that manifests in effective role function.

In Chapter Two it was identified that this research must be concerned with a theory of andragogy in which adult learners must be able to rationalise and justify their learning in relation to medicine administration (Knowles, 1978). However, it must also seek to evaluate how learning may take place. To determine the effectiveness of preparation it is important to consider whether students who have been prepared can be involved in practice. If there is a lack of involvement by all students, then the relationship between preparation and practice must be examined. If some students show lower involvement, then examination of that sub-group may be relevant. Although understanding rationale for practice is indubitably important in assessing individuals in specific circumstances, it does not support knowing whether a programme is effective for a group, and thus fails to meet the requirements of this study. A qualitative stance would thus be problematic because of the reliance of the approach upon the subjective and individual nature of the phenomena to be studied.

Finally, the notion of using phenomenology to determine student insights into practice, although successfully defended as a method of evaluation (Fraser, 1998), has weaknesses. Firstly, to gain understanding of students' perspectives of their preparation for a practice role using a qualitative approach, there must be an assumption that the students themselves can verbalise the nature of the practice and thus what their needs might be. However, students' understanding may

develop incrementally through a study programme. Their perceptions may further be reliant upon them obtaining appropriate theoretical and practical experiences. Interviewing students about their competence in achieving in practice would thus be inadequate, because depending upon position in the diploma course, students' may not know what it is that they need to know in order to become competent staff nurses. They may only be able to relate their current observations of practice, which may be subjective to their limited placement experience.

Secondly, the pragmatic capacity for using qualitative methods in such an evaluation would make the sample small, and then such a study would only be able to ascertain what role functions a small number of students did or did not feel competent to achieve. Whilst it may be possible to understand why some students find certain aspects difficult, it could not be assumed that this was the position of all students on the course. Indicators that were identified as potentially influential in a practitioner's capacity to administer medicine successfully in previous research could not be measured. Examples include previous mathematics qualification, gender, and practice experience. A small qualitative study would not necessarily be able to determine areas of practice found to be complex by several cohorts of students and thus the wider picture may not be observed.

Consideration of a Quantitative Approach

A quantitative approach would be the next logical consideration as a means of achieving the aims of this research. Such an approach would traditionally follow a positivist epistemology and as such would assume an existing theoretical context, underpinning the constraints and promoters of practice activities. It would

aim to seek to objectively describe and test practices across different clinical specialities to confirm or refute the relevance of theories identified within the literature review. In theory, this approach could subscribe to being context-free.

In a purist sense, however, this also has weaknesses in relation to this work. Firstly, a major difficulty in using an approach derived from such an objectivist view is that the rules that preclude, permit or force medicine administration in practice are found within the literature to be societally structured. This is further evident at different levels eg, legally, professionally and personally. These rules may be unique to individual practice areas, and practice may be based upon professional judgement given the prevailing social conditions at the time. These considerations cannot be ignored, given the literature review that indicated a lack of clarity of regulation, and identified that subjective professional judgement was implicit in practice. To assume existence of role activities in all areas of practice without further exploration would be undesirable. Such exploration would require an approach which allowed theory generation rather than testing of existing theoretical positions. It would not be possible to 'experiment' (Cohen and Manion, 1994; p67).

The aim of this work is therefore to evaluate, and to describe and compare situations. Potential attributes related to the nurse's role in practice must be examined. This takes more of a phenomenological stance than one that subscribes to a paradigm of logical positivism.

Finally, in evaluating student involvement in relation to a role in administering medicine to children, individual student characteristics must be comparable within the sample. This would offer the best means of comparing theory drawn from the literature with student perceptions. It would identify relationships between these and successful role criteria. However, students' needs and perceptions cannot only be considered objectively as this would dismantle an important premise of effective education, namely to develop individuals to their individual optimum capacity (Hopkins, 1993).

A Synthesis of Views

A methodology was adopted that was considered optimally efficient in meeting the aims of this work most closely. The design is justified through examination of related studies concluded within the literature review and issues related to feasibility, practicality and economy have also been considered.

The research design is primarily concerned with describing and comparing behaviours, perceptions and attributes of individuals in relation to medicine administration. It is based on one School of Nursing and supporting Health Trusts and as such follows the case study tradition. The study thus subscribes to qualitative and quantitative paradigms in a complementary way. Cohen and Mannion (1994; p40) suggest that this is possible and may "...lessen the tension that is sometimes generated between them." Goodwin and Goodwin (1999; p54), who discuss the work of Reichardt and Cook (1979), support Cohen and Mannion. They suggest that the linkage between paradigm and method is neither "...an inherent nor necessarily a consistent requirement."

The overall approach taken was quantitative using a descriptive method. This is unusual, as describing phenomena has traditionally been considered the domain of qualitative researchers. The difference between quantitative and qualitative approaches in relation to descriptive research lies with the intentions of the work. Quantitative descriptive method is more concerned with understanding what is happening and comparing features and attributes, usually of relatively large sample groups. Qualitative descriptive research seeks to understand and explain why a situation is as it is, in an in-depth way, usually focussing upon small samples and individual perception.

> *The purpose of (quantitative) descriptive research is the exploration and description of phenomenon in real life situations. This approach is used to generate new knowledge about concepts or topics that have limited or no research. Through descriptive research, concepts are described and relationships are identified that provide a basis for further quantitative research and theory testing.* (Burns and Grove, 1993; p51).

This method allows for some assumptions to be derived from existing theory within the literature review, and further allows focus upon the features to be evaluated within the aims of this work. It allows nurses and students descriptions of their perceived involvement in their practice to be compared and analysed in an objective manner. Such an approach acknowledges underlying social constructs but does not dwell upon them. The focus is upon believing the experiences described to be an accurate representation of reality. These can be used to illustrate answers to the research questions in terms of determining role criteria and function, rather than asking why people might respond in the way that they do. It is intended to map out criteria that constitute practices in medicine

administration, and to use that map to compare student perceptions of their involvement in practice with the requirements of their future registered role. It is also intended to appraise the sample in relation to their perceptions of their practice involvement, and examine characteristics that may influence responses.

The limitations of using a descriptive method lie dominantly with issues of control. There is an assumption that research participants will present an accurate picture of reality, and there is no examination about whether, or why, they may behave the way that say that they do. Indeed, since the respondents are not being assessed as part of any course or in relation to professional development, and in all cases, responses will remain confidential, there are few reasons to assume anything else. However, issues related to the reliability of this work will thus be considered in detail as the design is developed.

3.2 The Research Design

This work will follow a multistage design addressing each of the aims as indicated within the Flow Chart (Figure 2). The first stage will use semi-structured interviews. Nurses will be asked to discuss their practice including some critical incidents. It is anticipated that these will highlight potential role activities associated with registered practice in administering medicine to children. The nature of describing practice may take into account issues related to their role function and this is predominantly the reason for this data collection.

However, it is recognised that describing critical incidents could also help nurses to illuminate aspects they find particularly challenging. These can be compared with students' responses to consider how nurses and students perform medicine administration. They allow understanding about what may challenge learner achievement of effective transition to registered practice. An example relates to giving a medicine. A nurse with limited experience of giving in a specific setting, may identify aspects that challenge their practice.

Although this would not initially be used in devising an inventory of criteria involved in practice, a review of the questionnaires may offer comparative insights if the students also demonstrated limited involvement in this area. The interviews thus acknowledge a phenomenological dimension of describing a 'lived experience' of practice that is context driven.

Data gained from the interviews will be collated, using a quantitative analysis procedure that seeks to identify activity criteria related to the role of the nurse in administering medicine to children in their practice setting. This allows medicine administration practice to be compared across children's nursing specialities and determine what (if anything) may constitute generic practice. Contextual differences will not be considered for clarity. To further establish validity across speciality and yet become context free, the activities will further be reviewed by the participants and then considered by an expert panel.

Figure 2 A FLOW CHART ILLUMINATING THE RESEARCH DESIGN

AIM ONE
To identify activities which comprise the role of registered nurses in administering medicine to children.

RESEARCH DESIGN
- Semi Structured Interviews of 20 Qualified Nurses across a range of paediatric nursing settings
- Perform content analysis of transcripts to yield activity components of practice.
- Use content analysis to classify activities and describe the practice of medicine administration.
- Review of activity items for completeness and external validity using modified Q sort process and inventory review

AIM TWO
To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.

RESEARCH DESIGN
- Develop activity inventory into a perception questionnaire
- Use questionnaire to determine student and newly qualified nurse's perceptions of their involvement in activities comprising qualified practice in medicine administration.
- Use Cluster analysis to group activities into domains according to response by all respondents.
- Describe activity domains using 'typical items' showing mean scores close to cluster mean, and analysis of all items in each domain compared to learning theory identified in literature review.
- Use Cluster analysis to elicit response groups showing significant differences in response to other groups ($p<0.05$)
- Use cross tabulation and chi square to determine biographic attributes of clusters.
- Use IATS to compare clusters group responses within each activity domain
- Test consistency of activity domains and clusters using a replication study
- Compare student and assessor perceptions of student involvement using paired study
- Illuminate responses in detail by generating case profiles related to each activity

AIM THREE
To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one diploma in nursing curriculum.

RESEARCH DESIGN
- Obtain session material from teachers responsible for teaching administration of medicines within one Diploma in Nursing Course.
- Map content of sessions according to Eraut et al's (1995) model of curriculum evaluation in order to review type of learning student may achieve.
- Compare session content with 11 broad classifications of practice in medicine administration practice

AIM FOUR
To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

RESEARCH DESIGN
- Compare findings from respondent clustering exercise with evidence from document mapping exercise

AIM FIVE
To propose a strategy for preparation that could enhance role function in administering medicine to children

- Use discussion to synthesise findings in the context of the existing theoretical framework to conclude enhanced understanding of the nature of the research problem and propose a future strategy for practice preparation

As shown in the Flow Chart (Figure 2), the activities will then be developed into a questionnaire that can be used to survey student nurse's perceptions of their involvement in practice activities. It is anticipated that the findings from the interviews may usefully aid the formulation of criteria that would allow students to comment on their ability in relation to given practice. This would avoid forcing them to independently identify a future role with which they may yet be unfamiliar. A reliable common descriptor of such practice has further benefits:

- Comparison of perception across cohorts is possible
- Repeated measures across time, within cohort groups, are possible.
- Practices that are rated poorly by all students can be identified.
- Key student characteristics related to performance can be identified
- Curriculum delivery can be compared with student perception of their involvement in practice.
- The tool has future potential for informing students and teachers about the expectations of a registered nurse role in medicine administration. This offers potential for informed evaluation and curriculum development.
- Development of such a measure can allow comparison of student perceptions about their ability, with those of registered nurses who may be assessing them.
- A second stage to this work could serve to validate the first by reviewing student's perceptions at different stages in the course and by comparing the perceptions of assessors and students.

The student survey will take place in two stages. A first evaluation will include the whole population of student nurses undertaking the child branch programme, and

all those students following the common foundation programme whose intention is to undertake the child branch at the study university. This will examine student perceptions of their ability in activities related to future practice in medicine administration, and will allow ordinal ranking of their perceptions. Data analysis using a multivariate analysis programme will allow the comparisons to be made, and also for post hoc reliability of the measure to be observed.

Curricular review will evaluate current taught provision within the diploma programme. The taught documentation will also be compared with the activities found to be part of a nurse's role in administering medicine to children. It is anticipated that it might ultimately be possible to make a comparison between taught preparation and student perceptions of their involvement in medicine administration.

In a second stage of the survey, the first stage responses will be compared with responses of a smaller sample of students who are studying within the child branch. Some students will be paired with their practice assessors in order to appraise similarities and differences in perceived ability, whilst other students within the same cohorts will act as a control group for the paired students. This will allow for a triangulated review of the findings from the first survey. The research literature identified that student perceptions of their capability varied from that of their assessors, and that self-report questionnaires have limited use, as they only report what the respondents say they do rather than their actual practice (Daines, 1985; Arthur, 1995). This design seeks to address such criticism.

Finally the design allows comparison between external assessment of learning based on behavioural outcome measures, and internal perceptions that may relate to a student's background, their personality, or their perceived appreciation of the context of their practice. Comparisons will be made between individual student respondents and their assessors using consideration of personal profiles. The aim is to review specific differences between students and assessors and to compare each case study. This again serves to illuminate previous work rather than to explain it.

The discussion chapter brings the findings of this research together to consider the initial research problem: To understand more about the preparation of nurses for a registered role in administering medicine to children. This will include the identification of factors that may be instrumental in errors made by nurses who have successfully completed the Diploma in Nursing. The findings of the evaluation will be used to propose a practical strategy for the development of medicine administration preparation for children's nurses, and discuss how this has been implemented within one School of Nursing. As an introduction, the next chapter of this work describes the course undertaken by the student nurses involved in this study.

4 Chapter Four - The Diploma in Nursing Course

4.1 Diploma Course Organisation

The Diploma in Nursing programme involved in this research was a full time course of 156 weeks. In the first eighteen months, students followed 20 modules of 75 hours that proceed to assessment in a range of subjects related to nursing within all nursing branches (Child, Adult, Mental Health and Learning Disabilities). The first nine modules were rated at level O and offered foundation credits. These were offered so that any student accepted onto to the programme with a minimum qualification of five GCSE's, could work to achieve matriculation level. All other students attending the course needed to undertake the subject material but did not require the academic credits to progress.

The subsequent eleven modules were credit rated at level one, equivalent to higher education certificate level, (Mid-Trent College of Nursing and Midwifery, 1992).

In the remaining eighteen months the students pursue modules directly related to the area of nursing practice in which they wish to qualify, and these modules (22-33) are rated at level two, or higher education diploma level. The outcome of successful completion of the course was the award of a Diploma in Higher Education (Nursing), and entry to the part of the UKCC Professional Register that relates to the nursing branch they have studied. In this work, those qualifying would enter Part 15 of the Professional Register (Children's Nursing) (Mid-Trent College of Nursing and Midwifery, 1992). The practice component was integrated throughout the programme but with a balance of one-third practice to two-thirds

theory within the Common Foundation Programme and two-thirds practice to one-third theory within the Branch programme, this created module 34.

The Balance of Theory to Practice

This balance of theory to practice has always been controversial. In the pre-Project 2000 curriculum (UKCC, 1986), the strong emphasis upon practice throughout the courses available led some to comment that nurses had developed knowledge of what to do but failed to understand the theoretical underpinning to their practice thus failing ultimately to become knowledgeable doers. Indeed, in relation to the front loading of theory to practice included within the Project 2000 curriculum, Fraser (1998; p11) suggested;

> *It is possible that drawing upon a large number of academic subject experts early in the programmes could tend to overload the early years with content but could reassure the (midwife) practitioners that the new type of students, once allowed in practice, would at least be knowledgeable if not socialised doers.*

She does recognise however, that Eraut et al. (1995) contest such a view, suggesting that lack of integration of theory and practice is likely to be wasteful because without linkage to practice it may be forgotten and must be repeated.

As far as medicine administration is concerned, opportunities to practice were most likely to occur in the branch components of practice rather than in the Common Foundation Programme (CFP). This is partly because in the CFP practice placements were shorter in duration and in total balance than in the branch programmes, but also because the nature of the placements attended. In

reflecting the philosophy of the course, these placements were also focussed around the healthy individual in the community settings. For children's nursing this meant students attended schools and nurseries to develop understanding of the needs and development of healthy children. Clearly, medicine administration practice is more limited in these areas.

Teaching Methods and Assessment Issues

Throughout the course, each module facilitated learning through a variety of methods including lectures, seminars, and practical work within the classroom, through laboratory work and in practice placement settings. Students were encouraged to work both individually and within groups. Summative theoretical assessment in most modules was through the submission of written assigned work, although there was an integrated unseen examination included which part assessed the level 1 modules, 10 and 11 (Behavioural Sciences in Health Care); 13 (Applied Biological Sciences) and Modules 14 and 15 (Research Based Nursing Care). In the branch programme a further unseen examination assessed modules 32 and 33 (Management and Professional Development). To successfully complete the diploma programme, students must demonstrate satisfactory achievement within the practice settings. The levels of expected achievement were derived from Benner's (1984) adaptation of the Dreyfus Model of Skills Acquisition. This aspect was subject to particular scrutiny and development locally, through a commissioned research study by Hancock (1994) and full details of recommendations may be found therein.

4.2 The Curriculum

Students attending two modularised programmes were included within this research. These were both included within a variation of the original programme which was validated by the ENB (Mid-Trent College of Nursing and Midwifery, 1992). The initial programme was developed under the initial philosophy proposed by the UKCC's Project 2000 report (1986). Although all material used within the courses remained the same, the programmes were restructured in order to allow for new, modularised schemes to take place. These were completed in accordance with the university requirements for an accredited modular design.

Development of the curriculum initially drew on three major influences. The first was the cultural curriculum model identified by Lawton (1983) and developed further for nursing by Gilling (1989). This identified eight core areas that were adopted to form the basis of this curriculum. Secondly, the English National Board's five basic concepts were adopted;

- The Individual;
- Health;
- Health Care;
- Society
- Nursing

This initially provided themes for the five terms of the CFP, but was subsequently included as underlying themes within all CFP modules. Finally, the notion of

'caring' was considered an essential component and offered a central focus for the provision of the nursing curriculum.

Students included in this work were participating within the 1992 curriculum variation, but findings have had a potential influence for later curriculum revalidation. This was especially within the child branch component of the course as the newly validated child branch began in March 1998. A further revalidated curriculum began in September 2000, as the result of 'Making a Difference', (DOH, 1999). This work has again contributed to curriculum development.

For nurses already registered with the UKCC there was opportunity for transferring to children's nursing by applying for entry onto part 15 of the register.. At this university, students completed a shortened programme of 2 weeks. They had the same assessment criterion as those within the conventional programme, and attended much of the same taught component. However, it was assumed that as registered nurses they have already gained knowledge and experience in relation to management in professional practice: thus both theory and practice hours were reduced to acknowledge this prior learning and experience.

The Practice of Medicine Administration within the Curriculum

The content of the course was integrated and accorded to the modules already identified. The principles and practice of medicine administration were difficult to recognise within this mode of delivery, for there were few taught sessions that directly accorded to the title. However, the School of Nursing established special interest groups attended by nurse teachers to develop teaching. These used Gilling's (1989) curriculum areas.

Although the special interest groups worked separately for development of their own curriculum areas, they were grouped and co-ordinated by four core group leaders as follows;

- Nursing Theory and Practice, Moral and Ethical Reasoning, Professional Issues.
- Biological Sciences
- Concepts of Health
- Communication and interpersonal skills, individual needs and drives, behavioural sciences

The core group leaders had an overview of their subject speciality and helped to enable the course to progress without repetition as content developed dynamically over time. Discussion with core group leaders enabled determination of features included within the CFP that they considered relevant to medicine administration. Further discussion with those teaching the child branch elicited outline information regarding teaching on this component of the course. It should be noted however, that assessing the theoretical component did not take account of students' practice experiences. However, within this programme, there was no specific requirement for students undertaking continuous practical assessment to achieve specific standards related to medicine administration.

4.3 The sample frame for this research.

Students undertook the course at one of five education centres within the School of Nursing. These were geographically disparate. Historically the school derived from a merger of four schools. These amalgamated to create one large college in 1990. In 1992, the College merged with a further School of Nursing, and in 1995, moved from the National Health Service to the higher education within the Medical School of the University.

The first eighteen months of the course constituted the CFP. During this time, the students remained in their own locality and studied with students from all branches of nursing. All practice experience was gained close to the education centre where the student was based. During the second eighteen months, students completing the child branch programme undertook most of their theoretical work in one central location. They attended as one group of child branch nurses, combined from the five centres. Additionally, post-registration students undertaking the shortened child branch programme joined the group.

Students attending the course were likely to have achieved above national requirements for acceptance and would also specifically have a qualification at GCSE or equivalent in a science subject. They would not necessarily have had a qualification at this level in mathematics. They would be more likely to be female than male and white and British than of an ethnic background. For those attending the shortened Child Branch Diploma, recruitment differed because candidates were supported by their place of work. However, the candidates still attended interview and places on the course were competitive and subject to the candidates

having achieved matriculation level or demonstrated evidence of theoretical work which meets this standard.

The sample frame for this work included a population of students attending courses with the intention of becoming registered to the award of Diploma in nursing and registration on Part 15 of the UKCC register at the time of data collection. Additionally, as it would be of interest to the work to consider if the perceptions of students changed upon qualification, it was intended to seek the perceptions of students who had newly registered and who were working in the trusts served by the university.

In the second part of the work, students were only included if they were undertaking practice in child-care settings where the administration of medicines was likely to be a regular feature. This limited the sample to those students who were attending child branch, and who were following the 1992 variation of the Diploma programme outlined above. The selection of these cohorts was important for several reasons. Firstly, the curriculum being evaluated remained the same throughout the period of the research, and thus the students would have similar learning opportunities. Secondly, the re-inclusion of students in the later part of the work could enable validation of findings from the first part of the study, especially in relation to trends or changes within the cohorts. In the following chapters, the research undertaken will be presented.

5 Chapter Five - An Exploratory Study To Determine The Work Of The Registered Nurse In Administering Medicine To Children.

5.1 Statement of the problem

In Chapter Two, establishing a clear portrayal of the work undertaken by nurses in administering medicine to children was identified as an essential component of this study. This would offer a contemporary view of a specific aspect of children's nursing which is subject to professional, political and environmental influence. Further it would provide information required for devising a criterion measure for the assessment of student perceptions of their involvement in their future practice.

This chapter seeks to address the first aim of the study:

> *To identify activities which comprise the role of registered nurses in administering medicine to children.*

5.2 Methodology Issues

To meet this aim of the study, a quantitative approach was used. As discussed in Chapter Three, medicine administration is an area already identified as influenced by contextual values. However, the practice roles that are undertaken by nurses, though influenced by such contexts, are suggested to be experiences that may be described objectively by those performing them, and might be transferred between settings.

Figure 3 FLOW CHART ILLUMINATING THIS STAGE OF THE RESEARCH

AIM ONE:
To identify activities which comprise the role of registered nurses in administering medicine to children.

RESEARCH DESIGN

- Semi Structured Interviews of 20 Qualified Nurses across a range of paediatric nursing settings
- Perform content analysis of transcripts to yield activity components of practice.
- Use content analysis and illustrative quotes to classify activities and describe the practice of medicine administration.
- Review of activity items for completeness and external validity using modified Q sort process and Inventory review

AIM TWO
To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.

RESEARCH DESIGN

- Develop activity inventory into a perception questionnaire
- Use questionnaire to determine student and newly qualified nurse's perceptions of their involvement in activities comprising qualified practice in medicine administration.
- Use Cluster analysis to group activities into domains according to response by all respondents.
- Describe activity domains using 'typical items' showing mean scores close to cluster mean, and analysis of all items in each domain compared to learning theory identified in literature review.
- Use Cluster analysis to elicit response groups showing significant differences in response to other groups ($p<0.05$)
- Use cross tabulation and chi square to determine biographic attributes of clusters.
- Use IATS to compare clusters group responses within each activity domain
- Test consistency of activity domains and clusters using a replication study
- Compare student and assessor perceptions of student involvement using paired study
- Illuminate responses in detail by generating case profiles related to each activity

AIM THREE
To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one diploma in nursing curriculum.

RESEARCH DESIGN

- Obtain session material from teachers responsible for teaching administration of medicines within one Diploma in Nursing Course.
- Map content of sessions according to Eraut et al's (1995) model of curriculum evaluation in order to review type of learning student may achieve.
- Compare session content with 11 broad classifications of practice in medicine administration practice

AIM FOUR
To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

RESEARCH DESIGN

- Compare findings from respondent clustering exercise with evidence from document mapping exercise

AIM FIVE
To propose a strategy for preparation that could enhance role function in administering medicine to children

- Use discussion to synthesise findings in the context of the existing theoretical framework to conclude enhanced understanding of the nature of the research problem and propose a future strategy for practice preparation

Individual interpretation of the meaning of actions undertaken by nurses that is commonly accepted within the phenomenological philosophical stance thus serves no unique purpose in achieving the aims of this research.

It is suggested that a qualitative advancement of the findings (in order to determine rationale for action) may be a pertinent direction for future work. Further theory about the contextual nature of practice in medicine administration could then be generated. The stage of this work addressed in the next two chapters is highlighted in Figure 3.

5.2.1 The Overall Strategy

Semi-structured interviews were adopted to allow the development of descriptive characteristics of medicine administration practice identified by registered nurses working with sick children. This method of data collection was economically and practically feasible for one researcher given the limitations of the study. Further, it allowed some exploration of nurses' perceptions related to their practices. The use of key themes allowed the exploration of similar issues at each interview, whilst the flexibility of semi-structure allowed for probing areas of interest.

There are limitations to the use of the interview as a method of data collection, (most notably in this case, the risk of being unable to collect a comprehensive picture of an individual role from just one interview). However, the aim of identifying functions associated with a general role in medicine administration could be achieved. It was anticipated that constant comparison of data from each

interview could ground and affirm subsequent interviews and that a point of saturation, where little further information regarding activities characterising such a role may be obtained towards the end of the interviews, (Glaser, 1978). As the interviewer, I was not known to most of the respondents, but I introduced myself as working for the study university. This may have influenced participant's responses, but it was felt, not as much as if they knew my background as a nurse and a teacher.

The method selected was judged most appropriate following review of other methods of data collection. Open style questionnaires would have been time consuming in preparation and administration, and are associated with a low response rate. This is an important consideration if small samples are to be used. Further, the use of postal style questionnaires meant that there would be no guarantee that the person completing the questionnaire is truly the desired respondent (Topf, 1986). These features are critical to the inductive nature of this part of this work. Observation would have been difficult to accomplish because of the integral nature of medicine administration practice within total nursing care. Although an in-depth and possibly more reliable observation of practice could have been undertaken, this would have been time intensive and thus compromised the breadth of speciality and cultural diversity made possible by the use of the interview. Content analysis of transcripts was conducted to generate and evaluate categories of work practices that may characterise a practice role, and a critical incident chart (Burns and Grove, 1993) allowed comparison of key events across the specialities and localities used.

5.2.2 Piloting and Preparation

Two pilot interviews were undertaken and although this was a small number (10% of the total population) they yielded information about the pragmatics of conducting this research. It was found that although the senior managers were well informed about the study and had promised to cascade information to ward sisters, they hadn't communicated well. Letters were then sent to ward sisters before the main study commenced. It was further found that interviewing and making nurses feel at their ease was a skill that required practice. Situating the tape deck in front of the respondent whilst interviewing was sometimes off-putting for them, but placing it out of sight meant that their voice wasn't recorded clearly.

Information was also obtained about the semi-structured interview guide. Some amendments had to be made to the guide before progressing to the main study. The data from the pilot study were not included with the main results, although comparison was made between the responses given by the main sample and the pilot sample in the same placements, as a form of cross validation.

5.3 The Main Study

To obtain access, Senior Nurse Managers of all child health directorates within each trust were contacted and meetings were arranged to present the proposed study. These gained access to the practice areas and allowed information about the study to be passed onto the unit managers. They also allowed identification of relevant and influential local medicine policies. Finally, the meetings enabled a simple profile of each trust facility to be developed and for units that did not meet

inclusion criteria (either in relation to the unit or to the nurses) to be excluded. As noted in Table 1, no trust had a community facility eligible for inclusion. (This was because they either had no staff at D/E grade or they were not used as a teaching facility).

The nurse sample was identified for the study from wards in each manager's directorate. Senior managers informed the nurses in the practice areas about the study and I telephoned them at work after this. If there was agreement to participate, an appointment was made for an interview and written details were sent to participants. The selection of one nurse per practice area could be argued as an unreliable measure in terms of what may be represented by a whole ward team, so efforts were made within the interview schedule to counterbalance this weakness and to increase content validity. Given the time constraints of the study, the benefits of gaining a spread of views from different areas were considered to outweigh this potentially surmountable, limitation of reliability. As a limited form of cross-validation however, the two nurses who participated in the pilot study were taken from wards used in the main study and data from the same areas were reviewed for comparability.

5.3.1 Ethical Considerations

The nurse sample were not undertaking education within the school of nursing and thus were deemed by the health trusts to be adults able to offer informed consent. Therefore there was no need at the time of this study for referral to any ethics

committee to obtain permission to carry out the work. However, I did follow guidance offered by Royal College of Nursing (1993).

Nurses were assured of their rights in relation to confidentiality and informed that they could withdraw from the study at any time. They then had the opportunity to participate by returning the written acceptance or to withdraw from the study. Where withdrawals occurred, a new participant could be redrawn from the original speciality sites, thus maintaining confidentiality of all potential participants. Managers were not informed about how many nurses would be required from each ward and therefore were not aware about whether an individual who had been approached chose to participate or not.

5.3.2 The Interview Environment and Recording of Data.

Interview rooms were arranged on the nurse's site of practice, since these were undertaken during work time (as agreed by manager in initial access discussions). Interview data were recorded using a tape cassette recorder. The use of a second record as discussed by Powney and Watts (1987) was not considered useful because the ultimate destination for the data (a quantitative analysis of work practices) did not require interpretation of non-verbal response or context. However, it is pertinent to say that whilst it was possible (on most occasions) to control the privacy and calm of the surroundings, the interview period took place in high summer and some of the interview rooms were hot. This may have affected the duration of some interviews and subsequently the quality of responses.

On arrival I summarised the main aims of the work, and the rights of the respondent, in relation to participation and confidentiality of material. Respondents were asked if they would be happy to review the data obtained from the interview. This allowed the respondent an opportunity to acknowledge the accuracy of the interpretation of material and to clarify ambiguity. All respondents were finally asked for permission to publish/present material from their transcripts (anonymously) if appropriate, at a later date. They were then invited to give written consent and the interview began.

Before the tape was turned on, an outline of the proposed areas for discussion was given as recommended within Patton's (1990), interview guide. Taped interviews took around 45 minutes, and then frequently the respondents talked informally for a short period once the tape had been turned off. These discussions were often contextual and raised particular issues and concerns held by the nurses. The outline of these was hand noted after the interview was completed where information was considered pertinent to the study.

As researcher, I took particular care not to become too involved in policy discussions but was frequently seen as someone who could change practice or resolve their concerns and needed to clarify my position through discussion.

5.3.3 The Study Sample

The sampling technique adopted a multistage approach. First the practice areas were sampled, and then in a second stage, identifying a nurse to 'represent' the

area drawn. Probability designs were used in both stages in order to ensure that all nurses had who met the study criteria had an equal opportunity for inclusion within the sample and to try to ensure that the sample was representative of the target population. With hindsight, (and greater knowledge!) this was probably unnecessary given the small size of the sample. Although this method could ensure equality in terms of inclusion, it could not guarantee representation.

The decision-making process in identifying sample size is comprehensively explored by Burns and Grove (1993). Where an intensive examination of the sample views are required, they suggest that practical factors such as time limitations for data collection or the complexity of data collection with individual subjects may be instrumental in determining sample size. Indeed, pragmatic ability to study the sample is an important consideration in any discussion related to sample size. However, where analysis of findings must make statistical inferences about the sample to a population, then clearly the sample size needs to be calculated carefully in order to determine the power or strength of significance of the findings. A minimum sample can be identified in these circumstances.

In this study, the aim of the data collection was to describe role activities. Ultimately data would be used to inductively generate of a 'checklist' questionnaire to be used with student nurses. Data analysis would thus be descriptive, and there was no need to consider any inferential analysis of the data obtained. The above considerations outlined by Burns and Grove (1993) prevailed and sample size was determined through a mixture of pragmatics and an

acknowledgement that there may reach a point of data saturation where little more might be gained by continuing (Glaser, 1978).

An accessible population of nurses was identified. Criteria for inclusion was that the working area should be one that regularly involved students from the study university. These areas would be subject to annual educational audit to ensure that practices were of a standard that could provide an appropriate learning environment for students. Additionally, the areas would provide 'typical' role models because they would be demonstrating practice to students whilst on placement.

The decision to use a sample from this population was further taken because the service areas represent much of the wide range of specialities found in children's nursing nationally. The practice placements used by child branch students on the Diploma Course spanned seven Health Trusts and offered a variety of different professional and environmental cultures. These included care settings in large specialised children's units, as well as single wards in general hospitals, both rural and urban settings, and both modern and older facilities.

A representation from such a varied background has advantages and disadvantages. It could be argued that such a diversity of cultural variables could interfere with the study, by making responses deeply contextual, (thus returning to the context-driven versus context-free debate which has been a continuous thread through this work). If this were an exploration of the rationale for why nurses' behave in an observed manner, then such an issue would seriously

influence the validity of the design. However, for this study this point is an advantage, for the interest is in the broad range of activities incorporated into the registered nurses work and considered as included within administering medicine to children.

The sample of practice areas was derived using a stratified random sample of eligible sites. Practice area specialities were identified as strata that were proportionately randomly selected. This method of probability sampling increased the chances of smaller areas gaining inclusion since more of these were identified in the mixed medical/surgical strata. Proportionate sampling was used to enhance representation across the specialities and adhere to a true definition of a stratified random sample (Polgar and Thomas, 1991), however, this was performed approximately because of the smallness of numbers, and was not critical since the groups were similar in size. The final sample of practice sites is identified in Table 1.

In a second stage of sampling, nurses were identified who;

- By their job description were identified as performing a practice role similar to that of a nurse newly registered in caring for children (D or E grade according to the Whitley grading structure) and;
- Were not receiving any form of preceptorship themselves.

Nurses were sampled systematically from duty rotas. These nurses were selected because they would be undertaking a role similar to that expected of newly registered nurses in caring for children as recently registered, thus 'competent'

nurses, frequently hold D and E graded posts. As shown in Chapter Two, the 'competent' professional is deemed to perform and think about their work differently from someone who has been registered for long enough to become 'expert', (Benner, 1984; Meerabeau, 1992). Exclusion of nurses in more senior grades sought to gain information about the role of the junior nurse most effectively.

Table 1 SAMPLE OF PRACTICE SITES

PRACTICE SPECIALITY	NUMBER OF SITES ELIGIBLE	NUMBER OF SITES DRAWN
SURGERY ONLY	6	4
MEDICINE ONLY	4	3
MEDICINE AND SURGERY	6	4
HIGH DEPENDENCY/ INTENSIVE CARE	6	4
AMBULATORY UNITS	4	3
COMMUNITY CARE	0	0
TOTAL NUMBER OF SITES DRAWN/ELIGIBLE	26	18

A second criterion imposed prior to selection was that interviewees were not currently receiving any form of preceptorship. Preceptorship by a more senior nurse is recommended practice for newly registered nurses in the first four months following qualification (UKCC, 1999). It is also often provided for nurses who have been recently appointed to a new post. Preceptorship could influence the nurse's actions and the way they perceive their work because they have close contact with a supervisor. Also, since those receiving preceptorship were likely to

have been recently appointed, it they would be unlikely offer a representative view of practice in the area.

Systematic sampling allowed the subjects to be selected randomly. Since nurse duty rotas tend to be completed in an organised pattern, rotating the position requested reduced the risk of variables, (such as seniority or alphabetical order) from reducing representation. Practice areas were drawn from a hat, and the first one drawn was asked to supply the name of the first D Grade staff nurse or equivalent from the duty rota. The second practice area was asked for the first E grade or equivalent, and the third area the second D grade on their rota. This exercise proceeded until the sample had been obtained. Where an area did not have sufficient nurses to meet the request, the first nurse was requested, and the rotation began again. The final sample included 18 nurses drawn from different practice specialities across five health trusts. Two nurses declined to participate due to holiday commitments and these were replaced. Two extra nurses were also drawn from the units randomly and invited to participate in piloting the interview schedule. Table 2 illustrates the main biographic characteristics of the sample.

Sampling resulted in not all trusts being represented because the strata were determined particularly to reflect specialities rather than individual trusts. The combination of the trust and speciality would have made the sample impossible to randomise because of the smallness of numbers. However, it is acknowledged as a weakness that there may be unidentified differences not represented in the two

trusts not used at this stage. Efforts to minimise the impact of this lack of representation in the checklist design are highlighted in Chapter Six.

Table 2 MAIN SAMPLE CHARACTERISTICS

BIOGRAPHIC CHARACTERISTICS	NUMBER IN SAMPLE (N=18)
GRADE D (WHITLEY SCALE)	7
GRADE E (WHITLEY SCALE)	6
NURSE PRACTITIONER	5
QUALIFICATION TO PART 8 OR 15 OF UKCC REGISTER; WITHIN 2 YEARS >2 - 5 YEARS >6 - 10 YEARS > 10 YEARS	 9 4 2 3
DURATION IN CURRENT POST <1 YEAR >1-5 YEARS >6-10 YEARS > 10 YEARS	 8 7 0 3
TOTAL	N =18

5.3.4 The Research Tool

Interviews were designed using a semi-structured approach with pre-identified topic areas, but freedom to use probes of the narrative. A benefit of using a semi-structured approach was that it ensured some degree of consistency of response. This later proved useful in relation to the analysis of the data. It also allowed flexibility that was essential for eliciting the respondent's story (May, 1991).

The interview design adopted within this work used Patton's (1990) general interview guide and question type matrix as a starting point. The matrix and guide were initially selected because of the comprehensiveness of the questions and the

suitability of the outline. A strength of the guide was that it allowed an outline of areas to be discussed with the nurses before commencement of the interview (Patton, 1990). It further allowed an opportunity to set parameters for the interview and begin to build a relationship with the interviewee. As many of the respondents were unknown to me, building a relationship in the short time available was important in order to allow them to relax and talk freely about their role. This is particularly important in relation to medicine administration, because practice is subject to local policy and codes of practice. If variations are being performed at local level, then nurses may be reluctant to discuss the real world of their practice if they do not feel comfortable during the interview.

The nurses were asked to recount a recent experience of administering medicine to a child in as much detail as possible. This allowed an in-depth review of the kinds of practices nurses undertook, and let them begin with something that they could recall, thus acting as an ice-breaker. The critical incident then acted as a focus of comparison between this practice and other experiences.

Some modification of the Patton's (1990) question type matrix was required, since the main concern of this work was to explore the nurse experience in administering medicine. There was no need to establish the nurse's rationale for their action in any depth, except to illustrate their action contextually as an aid to analysis. Patton (1990) acknowledged that a weakness of his guide and matrix maybe that some issues important to the interviewer may be missed. In the pilot interviews, Patton's (1990) structure turned out to be restrictive and encouraged closed responses. It was difficult to gain the detailed information about specific

practice that was required and the interviews were short in duration. Further to the first pilot interview, a less structured approach was adopted. The key areas drawn from the matrix plus an extra area relating to wider aspects of nurses work related to medicines' administration were finally;

1. Situational analysis (using critical incidents)

2. Typicality of incident to other incidents undertaken

3. Wider aspects of management related to medicine administration in this practice area.

4. Knowledge/experience required to achieve work related to medicine administration.

5. Future changes to the role

6. Biographic information.

(Adapted from Patton, 1990).

Within each key area the interviewer was able to use probes to establish information that may have been missed by the use of the original design. For practical reasons, the interviews that took place were one-shot, open-ended semi-structured questionnaires. These are defined by Brink (1991) as the type of interview most at risk for criticism in relation to reliability and validity. This is because they do not allow for development of issues, or clarification of events at any further meeting.

To maximise the strength of the study in light of such potential weakness, the following features were incorporated. The sampling techniques used probability

methods at all stages to ensure equality and representation and thus promote external validity (Polgar and Thomas, 1991). All transcripts were returned to interviewees after initial transcription. 30% of transcripts were further returned to interviewees' for verification of interpretation after the first stage of analysis. This allowed the reliability of the data record to be checked. It also enabled also my interpretation at the analysis stage to be reviewed thus compensating for an identified weakness of subjectivity in using content analysis, (Polit and Hungler, 1989). This method finally allowed interviewees to reflect over the conversation and to add any pertinent points that they felt had been missed in the initial discussion. (In fact, the 30% that were sent didn't yield new information and so this number was accepted as a sufficient validation).

Information gained from the pilot interviews (which although limited was accurate because of the questions asked) was compared with main study interviewees as a cross-validation of accounts in the same areas.

5.3.5 Data Transcription and Analysis

All interviews were manually fully transcribed and then analysed using content analysis. Burns and Grove (1993; p597) define this as;

> *...a systematic means of measuring the frequency, order or intensity of occurrence of words phrases or sentences.....*

Content analysis was selected because it offered a means of handling narrative, qualitative material in a way that allowed quantification and description of

activities. Further support for this strategy of analysis in devising role checklists is offered by Youngman et al. (1988). They used the same method in similar circumstances when they were devising a checklist to evaluate the roles of nurses and technicians in high technology clinical areas. A process described by Polit and Hungler (1989) was adopted. This meant that the frequency and intensity of theme actions stated within the transcripts were the criteria for measurement. The transcripts were read and listened to on tape several times until items/themes began to emerge from the narrative. These were delineated on the transcripts initially, and then gathered together using a broad system of classification. Finally, a list of 217 work related activities was generated (See Appendix 2).

It was intended that these activities should form the basis to producing a checklist questionnaire that outlined the registered nurse's role in administering medicine to children. This would then be used to allow student nurses to compare their perceptions of their personal involvement in activities they may ultimately be expected to achieve once registered. Finally, key areas from the analysis were identified and used to compare the specialities and trust localities. A critical incident chart was derived to illustrate comparisons, and to determine the cross-contextual nature of actions described (Burns and Grove, 1993).

5.3.6 Results

Eighteen interviews were content analysed to determine whether there was an identifiable set of work activities associated with the nurse's role in administering medicines to children. Initial reading of the interviews allowed the development

of eleven classifying categories. These emerged from all the interviews. A twelfth 'other' category was initially generated, but since the nature of the categories was not mutually exclusive, distinct 'other' items were not generated. The twelfth category was therefore deleted.

The eleven final categories were;

- Admission of a child and family
- Discharge of a child and family
- Communication with other members of the nursing and multidisciplinary team
- Preparation to give a medicine
- Giving and recording a medicine
- Working with parents
- Working with children
- Medicines knowledge
- Personal responsibility
- Organisation/management roles
- Working with student nurses

As shown above, these are broad and span from before the time of a child's initial admission to a care area until after their discharge. These categories suggest that nurses' view medicine administration as an integral part of their overall role rather than an isolated incident associated with giving a medicine.

It was important to establish the external validity or transferability of activities comprising administering medicine to children across speciality and trust location. The representation of activities identified within the categories by each speciality and by each trust was therefore analysed. The results are presented in the critical incident table, (Table 3). The mean response across the categories was calculated at 15.09, (83.83%). This indicated that most of the 18 respondents identified some aspect of each category as included within their work activities related to administering medicines to children. Initial overview can conclude that a broadly defined group of practices in administering medicines to children is valid to all areas of specialist practice and across a range of trust cultures.

However, this first analysis was necessarily broad, and only considered eleven large groups of activities. A further examination analysed the more specific activities included within the category groups. The interviews had been selective in nature, as respondents repeated many items. Once an item had been identified within the subheading then it was not reselected if that interviewee had already responded within that category. Within the eleven categories, 217 items formed the basis for a checklist related to nursing practice in administering medicine to children.

Table 3 CRITICAL INCIDENT CHART SHOWING REPRESENTATION OF ACTIVITIES WITHIN THE CATEGORY GROUPS BY FACH SPECIALITY AND TRUST

CATEGORY	RESPONDENTS IDENTIFYING ACTIVITIES WITHIN SPECIALITIES	ACTIVITIES IDENTIFIED BY RESPONDENTS ACROSS TRUST LOCALITIES
ADMISSION OF CHILD AND FAMILY	MEDICINE (M) 3 (N=3) SURGERY (S) 4 (N=4) MEDICINE/SURGERY (M/S) 4 (N=4) HIGH DEPENDENCY 2 (HDU) (N=4) AMBULATORY (AM) 3 (N=3)	TRUST A 5 (N=7) B 5(N=5) C 3 (N=3) D 2 (N=2) E 1 (N=1)
DISCHARGE PLANNING	M 3 (N=3), S 4 (N=4) M/S 3 (N=3) HDU 2 (N=4) AM 2 (N=3)	A 5 (N=7) B 4 (N=5) C 3 (N=3) D 2 (N=2) E 1 (N=1)
COMMUNICATION WITH MULTIDISCIPLINARY TEAM	ALL RESPONDED (N=18)	ALL RESPONDED (N=18)
PREPARING TO GIVE A MEDICINE	ALL RESPONDED (N=18)	ALL RESPONDED (N=18)
GIVING AND RECORDING A MEDICINE	ALL RESPONDED (N=18)	ALL RESPONDED (N=18)
WORKING WITH PARENTS	M 2 (N=3) S 3 (N=4) M/S 3 (N=3) HDU 3 (N=4) AM 1 (N=3)	A 5 (N=7) B 3 (N=5) C 3 (N=3) D 1 (N=2) E 1 (N=1)
WORKING WITH CHILDREN	M 3 (N=3) S 1 (N=4) M/S 2 (N=3) HDU 4 (N=4) AM 2 (N=3)	A 4 (N=7) B 5 (N=5) C 2 (N=3) D 2 (N=2) E 1 (N=1)
MEDICINES KNOWLEDGE	M 3 (N=3) S 4 (N=4) M/S 3 (N=3) HDU 4 (N=4) AM 1 (N=3)	A 7 (N=7) B 4 (N=5) C 3 (N=3) D 1 (N=2) E 1 (N=1)
PERSONAL RESPONSIBILITY	M 2 (N=3) S 3 (N=4) M/S 2 (N=3) HDU 4 (N=4) AM 3 (N=3)	A 6 (N=7) B 4 (N=5) C2 (N=3) D 1 (N=2) E 1 (N=1)
ORGANISATIONAL ROLE	M 3 (N=3) S 4 (N=4) M/S 2 (N=3) HDU 4 (N=4) AM 3 (N=3)	A 7 (N=7) B 5 (N=5) C 2 (N=3) D 2 (N=2) E 1 (N=1)
WORKING WITH STUDENTS	M 1 (N=3) S 4 (N=4) M/S 3 (N=3) HDU 3 (N=4) AM 2 (N=3)	A 4 (N=7) B 5 (N=5) C 3 (N=3) D 1 (N=2) E 1 (N=1)

Through the analysis it became apparent that context did influence the extent to which some specific work activities were a regular part of individual nurses' work. It was possible to link these to the speciality or to trust localities. Illustrative quotes are used to illuminate these points. A further issue relates to the expansion of registered nurses' role in practice. The first two groups of quotes identify practices that may not normally be included as part of the student nurses practice. These were merely examples, and other aspects, such as 'advising a doctor to prescribe a medication' also appeared. The second two groups of quotes serve to illustrate the breadth and the complexity of practice.

Quote Group One: The Influence of Speciality Context in Nurses' Work

> *The other drug, we use quite a bit of antibiotics....(other drugs described here tape unclear)... and about 99 percent of it is IV's..* (Staff Nurse, High Dependency Unit (SN17)

Researcher So it's a big part of your role, doing IV's....?

> *Yeah, yeah, certainly, apart from basic nursing care, that's the biggest part of our role.* (Staff Nurse, High Dependency Unit (SN10)

Researcher So you don't give any IV's...

> *Not unless it's antibiotics, that's the only time we do give it. But we get the anaesthetists, like if they get restless after theatre, they'll sometimes give them something like pethidine IV, it acts quicker than anything else.* (Staff Nurse, Surgical Ward (SN8)

Quote Group Two - The Influence of Environmental Context on Nurse's Work.

In one site, the provision of children's services was within a small facility. They only had a pharmacy service between 9.00 am and 5.00 pm on weekdays. At weekends or in evenings one ambulatory unit had staff who have been prepared, (and saw this as part of their role) to reconstitute oral antibiotics from dried powder and to dispense medicines to take home from a medical prescription. This activity was not identified by any other practice setting, and was considered to be a unique activity.

> *We staff nurses in (area) have got.., been given permission from the pharmacist to.., out of hours when she's closed, half past five onwards and the weekends, we've got a certain amount of drugs that we can give as TTO's....* (Staff Nurse, Ambulatory Unit (SN12)

The inventory also included a number of applied activities such as admission preparation and assessment, preparation to administer a medicine, and discharge planning, that the nurses perceived were integral to medicine administration practice. Quote Group Three shows an example that relates to the breadth of practices perceived by staff nurses.

Quote Group Three – The breadth of a role in administering medicine to children

All respondents were asked when they felt their role in medicine administration began and ended with patients. This response was typical of many in outlining the integral part medicine administration played in the achievement of their role as a nurse.

> *So I would say yeah, it begins on admission your assessment, but even then if it's a longer term patient, you know, it begins even before*

admission, because you've had them before. It depends whether it's a new patient or it's one you know.... One you know and you know is coming in, you'll often check that you've got such and such in the cupboard for him, like you've got paraldehyde for a fitter, or sodium valproate or something for a known epileptic.... It begins when the child walks through the door, but it doesn't end when they go sometimes, because sometimes especially when you are giving TTO'S (take home medicines), parents then at home will phone you up and say "How am I giving this again?" (Staff Nurse, Medical/Surgical Ward (SN5).

Finally, respondents identified that there were some activities within the role that they felt uncomfortable with, in spite of their qualifications. Two major areas included here were related to making errors, and also to restraining and the use of force to administering medicine to children, but others such as giving medicine outside of local policy, and maintaining dignity of older children were also mentioned. Quote Group Four illustrates an example of the unease felt by nurses in administering medicine to children who do not wish to take it.

<u>Quote Group Four – Difficulties in nursing practice</u>

Okay, I can think of one experience which is a bad experience which sticks in my mind, erm, which was giving medicine to a seven year old little boy who has Downs syndrome and doesn't like taking his medicines. We got out the drug, we checked it and spent about ten minutes trying to persuade him to take it and then in the end we had to hold him down and give him it, which was pretty horrible.... (Staff Nurse, Medical Ward (SN7)

If it's an older child, then you spend a lot of time coaxing them to take their medicine. Sometimes you have to, what is the word...be cruel to be kind because if they need this medicine then you've got to get it inside them...you know they've got to have these things but they don't like it. (Staff Nurse, Medical Ward (SN4)

5.4 Discussion -The practice of nurses in administering medicine to children

The initial part of this evaluation sought to illuminate the position of medicine administration in children's nursing from the perspectives of those currently participating in it, and determines whether criteria might characterise medicine administration in practice. It can be concluded that medicine administration practice can be defined by the activities required to complete it successfully, and appears to be a practice area that is well known to those undertaking it even if it is not comprehensively mapped within existing literature

Eleven categories were identified that included 217 activities related to medicine administration. When compared with Ridge and While's (1995) findings it can be seen that there are similarities between their eleven broad categories and the eleven found in this work. However, there are differences in the way these are defined. Some of Ridge and While's (1995) categories can be subsumed under broader categories within this work. This suggests that there are a number of extra areas that children's nurses identify themselves as being involved in, that may not have been observed previously. This could relate to the different context in which the study took place or it may be that these categories were not observed as being medicine related by Ridge and While (1995). An example of this relates to discharge planning which was not separately identified by Ridge and While (1995) as a category. Planning for discharge may thus not have been considered to be a medicine related activity, however, the ordering of take home medicine clearly would be. In this study, enough activities related to discharge planning to identify them as a separate category.

Table 4 offers a comparison of the findings of this work and that of Ridge and While (1995). The type of practice role observed in Ridge and While's (1995) work is supported, but an extension is proposed, suggesting that medicine administration practice within children's nursing is defined by even broader parameters. The external validity of Ridge and While's (1995) work is enhanced because the features identified in a neonatal care environment are observable in a paediatric one.

Table 4 A COMPARISON OF ACTIVITY CATEGORIES FOUND IN THIS STUDY AND BY RIDGE AND WHILE (1995)

RIDGE AND WHILE (1995) CATEGORIES OF ACTIVITIES IN MEDICINE ADMINISTRATION	CATEGORIES OF ACTIVITIES FOUND IN THIS STUDY
	ADMISSION OF A CHILD AND FAMILY
	DISCHARGE PLANNING
MEDICINE RELATED DISCUSSION CLARIFICATION	COMMUNICATION WITH MULTIDISCIPLINARY TEAM
PREPARATION CHECKING KEYS	PREPARING TO GIVE A MEDICINE
ADMINISTRATION CLERICAL CHARTING	GIVING AND RECORDING A MEDICINE
COUNSELLING	WORKING WITH PARENTS
	WORKING WITH CHILDREN
EDUCATION	MEDICINES KNOWLEDGE
	PERSONAL RESPONSIBILITY
OTHER	ORGANISATIONAL ROLE
	WORKING WITH STUDENTS

The acknowledgement of a definition by the wide parameters defined in this work is important because it enables teachers to consider the breadth and depth of

medicine administration practice with new students. The findings of this part of this work effectively offers a contemporary map of medicine administration practice, identified as an essential component of learning as essential in novice learning (Benner 1984, Rolfe et al. 2001).

In depth examination of activities comprising medicine administration supports existing research evidence by identifying management of error, calculation and issues relating to communication and technical development. Practices identified in the discursive literature were also identifiable. Nurses considered medicine safety and recognised a need to be skilled in practice aspects including, for example, the administration of medicine via a variety of routes. They also needed to negotiate with parents, and the children themselves, as suggested in existing literature, (Dearmun and Whelsh, 1995; Hall, 1998; Moules and Ramsey, 1998; Huband and Trigg, 2000). Legal and policy based considerations relating to practice with children were identified as important. Nurses also perceived themselves to be highly involved in supporting and teaching. This was important within children's nursing literature where it related to the teaching and support of children and their families (Hall, 1998; Moules and Ramsey, 1998), but registered nurses also identified their role in medicine administration as including the teaching and support of student nurses on placement. They identified knowledge needed to perform these activities effectively. Latter et al. (2000), suggested that skills for teaching medication education are not well catered for in nurse education and not well achieved in practice. This may be different in children's nursing, where there has been a longer history of a family centred approach to care.

These findings compare interestingly with the recognised definitions of medicine administration illustrated in Chapter Two. They suggest that nurses recognise a wider definition more related to the Code of Professional Conduct (NMC, 2002a) and to the Guidelines for the Administration of Medicines (NMC, 2002b) than to definitions established by other professions. Nurses appear willing to embrace responsibilities that expand on their practice in this area, even at an early stage of their registered career. Further, they described core characteristics of their practice similarly across the specialities. However, the emphasis or intensity of some actions differed according to the speciality as illustrated in the quotes. Other areas however, did not preclude participation in activities unless they had not undertaken preparation to perform the role or unless there was another system in place that performed that work. In administering oral medicine for example, medical and surgical nurses found it a major part of their practice, intensive care areas acknowledged a lesser role but did not preclude it altogether.

Since no current research has specifically compared the practice of children's nurses within different practice specialities, it is a useful observation that there appears to be similarity across practice, for the purposes of educational provision. This has implications for the preparation of children's nurses for a wide range of specialities and also for those who are planning specific courses in particular areas. Evidence of different emphases in specific areas may enhance acknowledgement of basic skills in pre-registration education and allow consideration of a need for development of specific skills at post registration level.

This is relevant both in professional practice and in the provision of post-registration courses.

From a methodological perspective, the issue of context is relevant for discussion in light of the complexities identified within Chapter Three of this work. Qualitative researchers would suggest that this form of categorical appraisal is meaningless without the context to which the practices identified are situated and that it is naïve to believe that anything useful may be drawn from the abstraction of activities in this way. Although deeply critical of the use of qualitative data in a context free way, Silverman (1993) points out that to get a feel of data as a whole, the categorising or counting of data may be useful. In this case this point is adopted, since the main purpose of the data collection is to achieve this feel of the whole picture across as well as within the different context in which it applies. However, the limitations of this exercise are also recognised. Indeed, recognising that medicine administration is a component part of a greater role in the practice of nursing would indicate the importance of viewing the practice role as something that may be greater than the sum of its parts. Carter (2000; p36) points this out in discussing the complexity of nursing, as she identifies that '...understanding constituent elements does not necessarily give us access to a real appreciation of children's nursing in a holistic sense.' Breaking down medicine administration, as a component part of nursing, into many more components parts would therefore seem to lose the plot altogether within this assertion. Yet there is some value if this position is countered with an analogy of understanding nursing work as a jigsaw that ultimately comprises the holistic nature of nursing. In completing a jigsaw puzzle, the player has the ultimate aim of perceiving a holistic view of the

complete picture. This picture can be seen even if the jigsaw has a thousand pieces. However in order to become meaningful, the player must appreciate the content and relative position of each piece and put the picture together appropriately. By the time the picture is complete the player has scrutinised the properties of every piece. He has the satisfaction of knowing not only the whole as a picture that is greater than the sum of each individual piece, but also the importance of each piece in the construction of that whole.

It is proposed that there may be utility in understanding components and their construction towards an accepted greater whole, especially where previous attempts to describe the whole may have been unsatisfactory. Activities where context operates differentially are thus important to note. It is not proposed that these are exhaustive, more operating as an illustration of the potential relationship between medicine administration practice and situational context.

The first activity included work associated with checking medicines alone or with others where Trust policy varied. However, all agreed that checking medicines was part of practice. A further similar example related to nurses' administration of first doses of antibiotics (historically the doctor's responsibility). Secondly, a small number of activities were described that were contextual to the practical situation in which the nurses found themselves, as illustrated within the second quote, which discusses 'out of hours' dispensing of medications to take home. The emergence of these activities and others like it, must be acknowledged, as if they are felt to be difficult by registered nurses, their presence may act as a barrier or constraint to successful role function. There is thus potential for context to be

influential in medicine administration practice and it is suggested that further work may beneficial in exploring the everyday situations as a means of understanding the representation that is portrayed through this work.

The aim of this data collection exercise has been to identify activities that comprise practice in administering medicine to children. The ultimate intention was to identify common activities that represent medicine administration that are relevant in learner preparation, so that they may be used to determine student perceptions of their involvement as compared to registered practice thus addressing the later aims of this work. It is important to recognise that the inventory ultimately derived was only the view of eighteen nurses that had been subject to scrutiny by the researcher and the respondents. It is encouraging that this research is supported by existing literature relating to medicine administration practice (Ridge and While, 1995; Latter et al. 2000). However, the validity of the finer details of the findings may still be questioned as they look at actual practice rather than a notion of 'best' practice or what nurses should be doing. Indeed, it makes the further assumption that a series of activities can represent a role in practice that is communicable to others. Whilst the evidence reported is highly reliable in as far as the interviews do reflect nurses' perceptions of 'actual' practice, there is risk of lack of completeness through unintended omission by the nurses interviewed. To enhance the validity of this information, the analysis of the nurses' responses needed to be appraised by a wider audience. In the next chapter, these issues are addressed.

6 Chapter Six –Practice Activity in Medicine Administration- Refining an Inventory.

6.1 Statement of the problem

The research aim to be addressed in this section was a continuation of the first aim of the evaluation:

> *To identify activities which comprise the role of the registered sick children's nurse in administering medicine to children.*

Specific intentions within this section of the work were as follows.

- To highlight practice activities atypical of nurses work in this area.
- To determine any omissions, replications or ambiguity in the inventory.
- To validate inventory items as useful criteria by which to determine student's responses to nursing practice in administering medicine to children.
- To determine whether this collection of activities meet the requirements of a tertiary role as defined by Roy (1991).

A summary of the design of this part of the study is highlighted in Figure 3.

I needed to determine accuracy and external validity of the work in a practical way. For example, it was necessary to establish a thorough review of 217 activity items without exhausting the reviewers, and without detracting from the responses of the nurses originally interviewed. It was also essential for other stakeholders

involved in the provision of health services for children to recognise the defined role. It would be insufficient to simply say that the activity items outlined by some nurses interviewed did constitute their role if other nurses, managers and educators did not agree with them. This may be an issue about local resources or role extension, rather than about the nature of a common role in practice. The nurses would be contributing to activities that would not normally form part of their role in any other setting. Indeed, in discussing outcomes and competence for practice, Barnett (1994; p73) asks

> *...Are practitioners' the only authorities on best practice, in a public service surely other groups may have a legitimate voice?*

The requirement to establish or reject medicine administration as a role is fundamental, as this affects consideration of factors influencing role function. Finally, an effective and representative inventory of activities must be both relevant as part of the model in helping to explain and resolve preparation issues underpinning an 'organisational goal' of children's nursing. It may facilitate a plan to enhance the preparation of nurses to perform across a broad spectrum of settings. A final issue for consideration was the potential for generalisation to wider national and international concerns. It was decided that external consideration by a panel of stakeholders involved in administration of medicine to children could best review the nurse's responses. This method could address the issues raised above. Use of a panel would reduce a potentially high individual workload by allowing sharing of the 217 items for review, and could allow a variety of professional views to contribute. However, I was concerned that the

practical views of the original interviewees should continue to be heard. One limiting weakness could be associated with the subjectivity of a persuasive small panel (Burns and Grove, 1993), overriding the perceptions of the original respondents. A mechanism was devised to compensate change to actions identified strongly by the original samples, and this meant that such a problem could be reduced.

6.2 Methodology Issues

Two procedures were used to review the findings of the initial interviews. First, all 217 items were assessed by all reviewers. The aim of this was to determine any perceived ambiguity in wording, or replications or omissions. It was not intended in this procedure to ask their opinion about whether items should be included or not. Second, a Q sorting technique would allow review of individual activities by determining the most or least likely components of a nurse's work. (This is a process whereby individuals are requested to offer their opinion in relation to the relative importance of a number of items (or Q samples). According to McKeowan and Thomas; (1988; p7), the Q sort method provides "...a systematic and rigorously quantitative means for examining human subjectivity."

McKeowan and Thomas (1988) further suggest that subjective data, though always advanced from a point of self- reference can be communicated if the self-referent properties are not compromised in the initial analysis. Thus they can be analysed objectively. In this case, the activities identified were not compromised by initial analysis, as actions were being described rather being interpreted by the

researcher. Further although some interviewees had opportunity to review their scripts and the analysis of them, they made no changes, accepting them as a true representation of the interview.

A main advantage of the Q sort procedure is that it allows a large amount of data to be handled quickly by a small number of people. As the items identified at interview numbered 217, and the expert panel was a group of between ten and twelve individuals, this was important. Another advantage of accepting the Q sort procedure was that it allows expression of opinion regarding the likelihood of an activity being part of the role of the nurse. However, it does not allow individuals to reject any activities identified from the original interviews, thus preserving the nature of the original findings. It is the final decision of the researcher to reject activities that score poorly in the Q sort procedure.

The panel was instructed via a verbal briefing and information leaflets to overview the list of activities within a nursing role of administering medicine to children. They were asked to identify omissions, ambiguity, and replications. They were also asked to make their comments on blank sheets of paper, anonymously, and leave these at the research venue for collection by the researcher. Code numbers identified activities in the list.

The Q sort technique developed by McKeown and Thomas (1988) was adapted to suit the needs of this work. Since the number of items to be ranked was large it was not feasible to have all members of the panel sort them all. The Q samples to be offered to the panel were arranged into four quarters. Three contained 54

items and one contained 55, so that all 217 items were included. McKeowan and Thomas's ranking scale was amended to take a maximum 55 responses rather than their optimum of 60 by removing one space from each of the central five columns (See Appendix 3). This would not alter the principle of the scale or interfere with its reliability as a measure since the tool focused on the extremes rather than central items.

Piloting and Preparation

Once the activities had been divided an information sheet to instruct participants and summary sheets for noting responses were devised. To check the effectiveness of the written instructions and the summary sheet for use with the group, a teacher who was not part of the panel was asked to pilot the sorting technique. The aim of this was to determine the duration taken to complete the Q sort and to check the wording of the written instructions. Minor adjustments were made to the instructions in light of their evaluative comment. No piloting of the initial review was performed because this was considered self-explanatory.

The validation event was arranged on two geographically separate sites linked via video-conferencing facilities, to enhance potential panel attendance. The researcher planned to attend one site and a co-ordinator was briefed for the other site. Packs for the workstations were given to the co-ordinator of the second site to be checked by the researcher over the video prior to commencement. Video-conferencing rooms were booked, and panel members were notified of the dates and venues for attendance by letter.

6.3 The Q Sort Procedure

On the day of the review, the workstations were established in each site. The panel was briefed about the morning's work and time was allowed for any questions. One half of the groups on each site commenced the review whilst the second half commenced the Q sort procedure. Midway through the morning (on the completion of the Q sort by the first half groups) the groups were asked to change around. Each quarter section of the Q sample of activities were placed into blank envelopes and offered randomly to members of the group for appraisal (1-2 at each site). Instructions were given for the completion of the sorting exercise and a summary sheet exactly copying the ranking framework was provided for participants to note their decisions. Each site had two work-stations with a ranking framework set up on tables for completion of the sorting exercise.

Members were asked to rank alternately the activity they thought least likely to be part of a registered nurse's role (at D/E grade or equivalent) and then the activity that they thought most likely to be part of the role. After each decision they were instructed to place the activity at the negative point furthest from the middle for least likely inclusions, or positive point furthest from the middle for most likely inclusions. Evaluating each activity left on the table, participants should work their way to the middle until all spaces were full and all cards used. Completed summary sheets were clearly labelled with the section of data reviewed and submitted to the researcher for later analysis.

Q-sort allowed a review of score items felt strongly to be an essential part of the role of the nurse. Most importantly, this also allowed determination of activities that were considered less important within the role. As Cordingly et al suggest;

> *The activity of Q-sorting gives participants significant control in deciding what it is about an issue or phenomenon that is important to them.*
> (Cordingly et al. 1997; p8)

The panel completed the Q sort procedure with little difficulty and the debriefing at the end of the event indicated that panellists were broadly in consensus that their section accurately portrayed actions undertaken by nurses of D/E grade Whitley scale (or equivalent) in administering medicine to children. There was some discussion about the inability to reject items that were felt inappropriate, and further discussion about the fixed choices that were offered in their selection. One panellist commented that they felt that most of the tasks were highly likely to be part of the nurse's role and yet did not have space to put all the items at the top of the scale. For this study, however, whilst this is interesting, consideration related to fixed choice had been undertaken. It was decided that since the concerns of the researcher were mostly with the activities felt to be least likely to be included, the position of 'other' activities was less important. The final discussion served usefully as a debrief for panellists rather than offering information to the study.

The inventory review was taken seriously by the participants, and most felt that they were unable to achieve what was required of them during the time allowed, (a weakness that was not identified, through lack of piloting). Since panellists were only being asked to identify ambiguity, omissions and replications, it was

agreed that they could take the inventory away for a week and submit comments at the end of this time. Whilst this could have compromised the panel membership since other individual opinions may have been asked during this time, the original members were involved in the response so this was not considered to be a significant issue. (If they had consulted work colleagues over issues related to ambiguity, replication or omission, this could have only served to increase the reviewing audience and validate the inventory further).

6.3.1 Sample Selection

The expert panel was purposively derived from an existing curriculum development group. This group had the skill-mix required to create an external review panel and represented the main stake-holding interests identified in the underpinning framework of this study (namely education providers and recipients, service providers and practitioners and service recipients). The group already held regular monthly meetings, and thus they were easily accessible. They were a cross-university team thus representing the trusts already used in the interviews (and the two trusts omitted in the sample taken) and thus were able to have sensitivity to local policy and practice issues.

6.3.2 Ethical Consideration

This part of the study was asking for opinion from an existing team, who may already be invited to offer opinion on a wide range of issues related to the preparation of children's nurses as part of the remit of the curriculum development group. It was therefore not felt necessary to submit this part of the study for

approval by the school's ethics committee. As two students and one parent were to be included in the invitations however, the strategy for review was discussed verbally with the chairman of the committee and his consent was obtained to proceed. The research followed guidelines recommended by the Royal College of Nursing (1993). Participants were invited to attend the meetings and written summaries outlining the research were included within the invitation letters. On their arrival, panellists were briefed about their potential role and advised that their participation was entirely voluntary and any personal details would be confidential to the researcher. Written consent was obtained from each panellist indicating that they were aware of the nature of the study and their role within it.

Main Characteristics of the Sample

The sample consisted of eleven members including children's nurses, educators, student nurses and service managers. Table 5 indicates the characteristics of the 'expert panel'. The sample attended from all seven trust sites used by the university for student preparation and representatives attended from different parts of the nursing school (which is sited on five geographically distant sites). Apart from the student nurses, all attendees were registered to either part eight or part fifteen of the UKCC professional register. The one parent representing service recipients declined the invitation to attend the meeting. Since panellists were being invited to comment on the inclusion of practice items specifically within a professional role and grade, it was felt that parents not familiar with curriculum development may find this difficult to comment about meaningfully and so this stake-holding group was not represented.

Table 5 PROFESSIONAL ROLES OF THOSE PARTICIPATING IN THE EXPERT PANEL

PROFESSIONAL CONTRIBUTION	NUMBER OF PARTICIPANTS
NURSE EDUCATOR (CHILDRENS COURSES)	6
CHILDRENS SERVICE MANAGER	2
CHILDREN'S NURSES	1
STUDENT NURSES (CHILD BRANCH)	2
TOTAL NUMBER OF PARTICIPANTS	11

6.3.3 Strengths and Limitations of the Procedures.

A main strength of the Q sort procedure was the relative ease with which a large amount of data could be appraised by a small team of people. Additionally their responses could be reviewed complimentarily to the interview data from the staff nurses. A weakness of this technique lay with the sampling method. The respondents were used to working together and knew the opinions of others in the group. This may have influenced their responses. However, the acknowledged position of the respondents were as stakeholders, offering self-referenced opinion based on their own experience.

If there was a need for objectivity, use of the Delphi technique may have been more appropriate because the multiple stages employed within the procedure allows repeated review by different professionals using postal reviews. Delphi panels however, by virtue of their design, are subject to weaknesses associated with the completion of any questionnaire. An example here is that it is not possible to be sure in an anonymous postal survey, it is the designated expert who

does actually complete the response, and rationale for responses are not heard (Topf, 1986). The strengths of the Q sort and review procedure were that it was interactive and allowed some verbal justification for views, through the debriefing.

6.3.4 A Compensation Mechanism

In order that activities were thoroughly reviewed before any item could be excluded, a compensation mechanism was established. The compensation scores were added to the Q sort scores for each activity, and were dependent upon the number of times that the activity was acknowledged by staff nurses in the interviews as practised within their work role. This meant that the reviewing panel, without further consideration did not inappropriately reject activity items, identified many times by nurses during the interviews as common practice. However, those that scored badly in the Q sort and were not widely recognised by interviewees could be rejected (Table 6).

The final rejection score for the items was set at <2. This meant that the item had been given a score of two, by the Q Sort reviewers and additionally had been observed in practice by less than two practitioners. Since it was possible that two practitioners could have worked in closely linked practice areas within one trust this then allowed for peculiarities unique to individual sites to be omitted. The opportunity for further discussion about contentious items was permitted in the first stage of the review and an opportunity to act on practices that may be happening across their trusts (anonymously) was afforded to service managers. In the event, such controversies did not really arise, since staff infrequently

mentioned those practices given a low score. The compensation mechanism only once altered a score to include an item that would have been excluded by the nurses.

Table 6 COMPENSATION MECHANISM

COMPENSATION SCORE	NUMBER OF TIMES MENTIONED BY DIFFERENT NURSES AT INTERVIEW
0	1 TO 2
1	3 TO 4
2	5 TO 10
3	10 +

6.3.5 Analysis

Because of the descriptive nature of this work and a need to cross reference findings with the original nurse interviews, analysis was performed using a scoring technique rather than use of detailed inferential analysis. This could still achieve the same original aim of highlighting practices felt not to be typical of nursing work or inappropriate for inclusion. An accepted method of analysis within Q sort is the use of factor analysis (Cordingley et al. 1997). However, the considerations for this research were as follows. A practical and simple process was required for reviewing a large amount of data, only in terms of the total content. At this stage there was no need to be concerned with how the activities were grouped (relevant in the use of factor analysis) because the activities were simply being used to create a questionnaire. It would have been possible to use Q methodology throughout the complete work, but consideration of this led to the conclusion that this would be pragmatically difficult because of the nature and diversity of the student sample. In this case the Q sort process was required only to aid

development of the tool and enable consideration of completeness. Internal consistency of the tool would be measured using post-hoc Cronbach Alpha (see Chapters Seven and Eight), whilst validity of included items was determined through data source and between method triangulation. This was achieved by the use of questionnaires with a sample of staff nurses and then the expert panel review and Q sort process.

Data were collated from individual summary sheets from the Q sort exercise onto a single sheet and sample means were derived. Scores of 1 - 11 were allotted (with -5 scoring 1, to +5 scoring 11). This was useful since the scores of interest (potential rejection items) would then clearly be identified at the lower end of the scale. Once scores for each item had been established, they were adjusted using the compensation mechanism (Section 6.4.7.) Those items scoring less than two were rejected from the final checklist. I then collated data from the review and withdrew activities that were considered replications of the same action. Omissions, where there was consensus from the panel, were included and wording was amended to improve clarity.

6.3.6 Results

Following the Q sort, seven activities were rejected as not typical of the role of the nurse (scoring less than two). After the subjective panel review, seven items were added as previous omissions as shown in Table 7. Also after the subjective panel review further sixteen activities were removed. These were mainly repetitions

with some amendments to wording. 201 items were included in the final inventory.

Table 7 ACTIONS REJECTED OR ADDITIONALLY INCLUDED AS PART OF THE ROLE OF THE NURSE IN ADMINISTERING MEDICINE TO CHILDREN.

REJECTED ACTIONS IDENTIFIED AS LESS LIKELY TO FORM PART OF THE ROLE OF THE NURSE	ACTIONS INCLUDED BY PANEL AS LIKELY TO FORM PART OF THE ROLE OF THE NURSE
GIVE FIRST DOSE OF INTRAVENOUS MEDICINES	DECIDE WHETHER TO REPEAT A MEDICINE IF A CHILD VOMITS AFTER TAKING IT
FOLLOW UP CHILDREN IN OUTPATIENTS	TAKE RESPONSIBILITY FOR KEYS SECURING MEDICINE CUPBOARDS
GIVE MEDICINES WITHOUT PRESCRIPTION ON 'STANDING ORDER'	DISPOSE OF UNUSED OR WASTED MEDICINES
ASK THE PHARMACIST TO SPEAK WITH THE DOCTOR ABOUT PRESCRIPTIONS	USE AN INFUSION PUMP TO ADMINISTER MEDICINES
ORDER CONTROLLED MEDICINES	DOCUMENT MEDICATION ERRORS
REMOVE CHILD PROOF LOCKS ON BOTTLES	TAKE RESPONSIBILITY FOR PARENTS WHO GIVE MEDICINES TO THEIR CHILDREN IN HOSPITAL
STORE PARENTS PERSONAL MEDICINES	TAKE RESPONSIBILITY FOR CHILDREN WHO SELF- ADMINISTER MEDICINES IN HOSPITAL

6.4 Discussion

The relative ease by which the expert panel managed to complete the inventory review offers several messages. First, this suggests that it is possible for those who are familiar with medicine administration to analyse actions, without assigning any specifically applied meaning, even though each may perceive a meaning in individual gestures (Fiske, 1981). This is an underpinning premise of achieving a Q-sort, (McKeown and Thomas, 1988; Cordingley et al.1997). These actions are additionally communicable to others in a similar field for comment

even though they may have differing experiences in practice. Nurses were in broad agreement about what items should be included within practice and so could be specific in its definition. As in Chapter Five, this again included the extent of practice as well as the parameters.

The contextual definition and examination of governance of medicine administration were considered in the literature review, where constraints and ambiguities faced by performers of such practices were proposed. For those charged with the responsibility for the preparation of individuals across a range of different health trusts, this may create difficulties, as policies and procedures differ. Although nurses, doctors and pharmacists each have their own systems of work, their own accountability, and their own professional norms related to medicines administration, and each make a contribution to local policy, this was not identified as a particular concern by nurses interviewed. They were able to explain the parameters of their work and communicate these using activities comprising such practice, even without any specific context.

These stimuli are potentially contributory to the effectiveness of nurses' ability to adapt within practice. It is important to note that nurses continued to draw these parameters, irrespective of speciality or trust location. Benner and the social constructivists would argue however, that what is communicated between professionals may also include intuitive or process knowledge- (Polyani's (1958) knowing '*how*' as well as knowing '*what*'). This would suggest that these activities do not define a role. However, when one considers the activities in relation to Roy's (1991) definition of role criteria a different picture emerges.

Contextual stimuli associated with safe practice in medicine administration are complex and wide ranging in the activities that comprise them, and in the nature of the requirements to achieve them. Indeed, through these, practice is communicable by registered practitioners. Further, when one examines the nature of activities concluded it can be seen that they do collectively represent a means to meeting one obligation for the achievement of a secondary role, namely that of being a competent nurse. Medicine administration also subscribes to a role in practice by the definition of Casey et al. (2000), if one considers evidence of decision-making.

The pursuance of medicine administration activities by the rules that guide them and by decisions that must be taken enables safe practice to occur. Without this, the nurse would be unable to sustain their practice within their secondary role as a nurse. For example, the nurses identified a need to assess children and their families to administer medicine. If a nurse failed in their assessment, they would fail in their obligation to provide quality care and ultimately subscribe to an overarching goal of children's nursing. Many other examples may be drawn from the activities identified that support the description of medicine administration as a tertiary role. Further, nurses are able to communicate their practice role effectively and describe their involvement with confidence. However, it is pertinent to question to what extent student nurses in preparation are able to do this and how such involvement might develop through their preparation to become a registered nurse.

This work can therefore conclude that for those involved in medicine administration, the activities that comprise it are sufficient to describe a practice role. The activities and categories may be used to facilitate communication and the use of a map to gauge learner's perceptions of their involvement in activities is thus possible. The notion of knowing *'how'* to achieve a process of administering medicines may be a limitation and this will be reviewed as appropriate within this work.

In the next stage of the research, activity items derived from the registered nurse interviews were used to devise a questionnaire to determine student involvement in the role of the registered nurse in administering medicine to children.

7 Chapter Seven – Student Nurse's Perceptions Of Their Involvement In Medicine Administration

7.1 Statement of the Problem

In the preceding chapter, the position of medicine administration was identified as a tertiary role that is an essential component of registered practice in nursing children. However, the way that learners and those who are newly registered perceive this role is not determined. This is essential in order to evaluate what may influence successful achievement of the role upon registration. In this part of the research, student nurses' perceptions of their involvement in role activities related to medicine administration were reviewed according to the second research aim:

> *To evaluate student perceptions of their involvement in activities comprising the role of a Registered Nurse in administering medicine to children.*

This part of the research is highlighted in the flow chart (Figure 4). The research design and analysis is highlighted on the chart and is addressed in Chapter Seven and Eight.

7.2 Methodological Issues

To achieve the aim of this part of the study, a representative sample of respondents undertaking the Diploma in Nursing programme were asked to describe their perceived ability to be involved in role activities. In Chapter Six, 201 activities

Figure 4 FLOW CHART ILLUMINATING THIS STAGE OF THE RESEARCH

AIM ONE:
To identify activities which comprise the role of registered nurses in administering medicine to children.

RESEARCH DESIGN

- Semi Structured Interviews of 20 Qualified Nurses across a range of paediatric nursing settings
- Perform content analysis of transcripts to yield activity components of practice.
- Use content analysis and illustrative quotes to classify activities and describe the practice of medicine administration.
- Review of activity items for completeness and external validity using modified Q sort process and Inventory review

AIM TWO
To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.

RESEARCH DESIGN

- Develop activity inventory into a perception questionnaire
- Use questionnaire to determine student and newly qualified nurse's perceptions of their involvement in activities comprising qualified practice in medicine administration.
- Use Cluster analysis to group activities into domains according to response by all respondents.
- Describe activity domains using 'typical items' showing mean scores close to cluster mean, and analysis of all items in each domain compared to learning theory identified in literature review.
- Use Cluster analysis to elicit response groups showing significant differences in response to other groups ($p<0.05$)
- Use cross tabulation and chi square to determine biographic attributes of clusters.
- Use IATS to compare clusters group responses within each activity domain
- Test consistency of activity domains and clusters using a replication study
- Compare student and assessor perceptions of student involvement using paired study
- Illuminate responses in detail by generating case profiles related to each activity

AIM THREE
To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one diploma in nursing curriculum.

RESEARCH DESIGN

- Obtain session material from teachers responsible for teaching administration of medicines within one Diploma in Nursing Course.
- Map content of sessions according to Eraut et al's (1995) model of curriculum evaluation in order to review type of learning student may achieve.
- Compare session content with 11 broad classifications of practice in medicine administration practice

AIM FOUR
To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

RESEARCH DESIGN

- Compare findings from respondent clustering exercise with evidence from document mapping exercise

AIM FIVE
To propose a strategy for preparation that could enhance role function in administering medicine to children

- Use discussion to synthesise findings in the context of the existing theoretical framework to conclude enhanced understanding of the nature of the research problem and propose a future strategy for practice preparation

were concluded as part of the role of the nurse in administering medicine to children. A data collection tool was needed to allow respondents to determine their involvement these activities, in a way that was not too onerous.

Practical management of a large volume of data was an important consideration. Using interviews, the items could be discussed with students in the category groups originally identified but interviews would be lengthy and numerous, and discourse analysis on a large sample would not be feasible. It was possible to continue to use the Q sort methodology used within the previous chapter using factor analysis as a mean of grouping items (Cordingley et al. 1997). However, this would make the assumption that students could rank the whole 201 items according to their involvement, and also made the assumption that all of the sample would understand every activity and be able to rank each one (McKeowan and Thomas, 1988). Since new entrants to the course were included within the sample, it was considered that this assumption could not be made. Students need to be able to identify that they were unable to be involved at all, in as many items as they wished, rather than a forced number required by the Q sort process. The simplest method to achieve student responses therefore would be to use a questionnaire.

Biographical details were determined using a closed question design, whilst student perceptions of their ability to be involved in medicines administration activities were identified using rating scales. The type of data collected in relation to role perception was thus the same for all respondents, and was immediately usable without further coding, (Tuckman, 1972). This method additionally

allowed ease of transfer of the activities identified in the registered nurse interviews. Respondents were asked to rate their perception of their ability to be involved in each activity. This had the benefit of determining a simple comparable response without offering confounding rationale related to understanding why individuals responded in a particular way. As the intention of the study was to determine what the students perceived, rather than why they perceived it, then this form of methodology was considered to be appropriate.

In light of the discussion above, a flaw often identified with postal questionnaire use, that of failing to allow determination of rationale for response, was not a problem for the aims of this investigation (Topf, 1986; LoBiondo-Wood and Haber, 1990). The questionnaires allowed a large sample to be included most practically by one researcher working alone. They had the benefit of cheapness, with main costs being stationery, rather than researcher time as found in observation or interview. The method also allowed anonymity of response. This was particularly important given the potential teacher/student relationship between the intended sample and myself. (Although the students knew me as a teacher, there was no direct relationship, as I had not taught them, and had no plans to do so). Disadvantages of the questionnaire lay mostly in the skill required to design.it well.

> *Well constructed questionnaires allow for relatively easy interpretation and analysis. Poorly developed questionnaires may cost more in time and effort and prevent the investigator from achieving the purpose of the study.*
> (Dempsey and Dempsey, 2000; p196)

Common design difficulties lie in the structure of question statements, the length of the final questionnaire and in its capacity to obtain the required information (validity) on many occasions (reliability). These issues were addressed in this research by maintaining the inventory that had been previously collated, and presenting it in an intact way. This had the benefit of including items that had been appraised for relevance of their inclusion and appraised for ambiguity. A pilot study sought to determine the reliability of the tool and this was supported later in the study by the post-hoc generation of Cronbach's alpha coefficients to determine internal consistency of the questionnaire items (See Table 16).

The main disadvantage to the questionnaire was that it included 201 activity items. This could have been a formidable task even for the most devoted respondent. The scale measure had to be simple to complete because of the length of the inventory. Since the aim of the work was to determine student's perceptions of their competence in a range of activity criteria. it was decided three parts could achieve this adequately. Thought must be also given to the analysis strategy. Since the sample were likely to be sub-grouped according to their responses, and the sampling frame was no more than 137, the number of respondents per group could be unacceptably low if too many response options were included.

7.2.1 A Strategy for Analysis

To determine the most appropriate method of analysis, Burns and Grove (1993) suggest a number of considerations about the nature of the study must be made.

These primarily include:-

- The purpose of the study
- Hypotheses, questions or objectives
- Design
- Level of measurement

Previous experience in statistical analyses, statistical knowledge, and availability of resources are also important. Burns and Grove (1993) further suggest the use the use of decision trees to aid judgement in selection of appropriate statistical analysis techniques. Using this information, the following points were concluded:

1. The purpose of the study was to evaluate student perceptions of their involvement in a registered role in medicine administration, with a view to determining an informed future model for nurse education and practice.
2. The study design incorporated the use of student questionnaires to examine student perceptions of their involvement in 201 activities related to administering medicine to children.
3. The research questions (as identified above) related to evaluating student perceptions about their involvement in medicine administration and exploring possible characteristics that could predict responses in future student groups.
4. The data yielded from this design was of two different types. A small amount of nominal data was obtained from biographic characteristics. This is nominal and uni-variate in nature. The remaining data obtained from the rating scales was multivariate, since involvement is assessed on a choice of three responses

to 201 variables. These variables may stand independently, or potentially they may group together as a range of attributes that characterise a response.

5. Each activity needed to be assessed on the responses of all the students. Again the activities were potentially independent, though it may be possible to groups them into an attribute, as was already attempted in the content analysis of the interviews in Chapter Five.

It was evident from this consideration, that a method of multivariate analysis was required alongside a means of determining the significance of nominal data as characteristic of responses.

> *Multivariate analysis is concerned with the joint effects of relatively large numbers of variables. This differs from the use of methods such as subset analysis to analyse many variables, in that in the examination of between-groups differences each measure is dealt with separately, regardless of how many measures are involved. If it is felt that a particular effect is caused by the interaction of a range of attributes then some form of multivariate analysis would be more appropriate.*
> (Youngman, 1979a; p95)

7.2.2 Comparing Multivariate Analysis Techniques

The main techniques for consideration were factor analysis or cluster analysis.

Whilst both of these methods require data to achieve at least interval level, Burns and Grove (1993) suggest that in the case of questionnaire data it is possible to treat some ordinal types of data as interval and thus apply parametric statistics (see further discussion in Chapter Eight). Youngman (1979a; p8/9) specifically supports such a consideration in relation to social data suggesting that a re-

categorising of data levels so that "...categoric or continuous would include ordinal data where the variations between categories are not gross."

Factor analysis would include the use of principle components analysis followed by varimax rotation, (for the best factor solution) and then regression analysis to obtain factor loadings, (Burns and Grove, 1993). This technique would enable groups of factors to be explained or characterised according to these loadings. Factor analysis could work well for the description of activity groups or domains. It would offer the benefit of statistical regression analysis in the explanation of factors. If confirmatory analysis were used, it has the potential of testing the structure initially identified in the content analysis. This may subsequently be used to refine the research tool.

> *In nursing research it (factor analysis) is most often used in the examination of instrument validity.* (Ferketich and Muller, 1999; p273)

However, the main aim of factor analysis is the examination of responses in relation to the factor to which they are a component. Mathematically related to statistical regression analysis (Burns and Grove, 1993) and the correlation coefficient (Youngman, 1979a), the concern of factor analysis is principally geared toward the similarity of each individual response to a particular factor. This would be useful when considering how all students may perceive the 201 activities. However, for the analysis of student responses, this research required a strategy for analysis primarily aimed to categorise individuals according to their similarity to the membership groups, but also according to their differences from other groups. The research aim of evaluating student perceptions of their involvement in relation to identified activities in the role of the registered nurse could then be

met, by allowing consideration about whether students respond similarly to activity items. If they could be classified into membership groups according to their responses, a method was required that could analyse whether biographical data were influential. Strengths and weaknesses in student learning regarding medicine administration could then be illuminated in relation to identifiable groups of students, and teaching may be tailored to meet their needs.

An alternative method of multivariate data analysis was cluster analysis. This would emphasise the clustering of respondents according to the way that they respond to the activities. In contrast to factor analysis, cluster analysis techniques focus on the grouping of cases by analysing variance between patterns of response scores in relation to each activity item. The items are not loaded once they are grouped, and thus the diagnosis of the cluster is not necessarily based on the weight of a few variables, rather on the whole group (Youngman, 1979a). If such a diagnosis were required then the variables could be examined in relation to their proximity to the clusters centroid mean for "typicality". If necessary, the application of a threshold during the clustering procedure could determine outlyers from the clusters that could be analysed separately.

The advantage of cluster analysis in this instance was that it was suitable for the classification of respondent case groups, and also allowed clustering of the activities. This enabled the involvement of the case groups to be compared with the identifiable activity domains. A disadvantage of this method of analysis was, as Youngman (1979a) pointed out, the method will always classify responses irrespective of whether any true classification exists. It is thus the verification of

the diagnosis of the clusters that is essential. However, with respect to factor analysis it could be argued that the highly quantitative nature of the technique makes the situation worse. A poorly applied factor analysis could include variables that are theoretically unrelated. These may result from data forced artificially through a process of factorising in an attempt to find factors when actually none exist (Nunnally, 1978).

In both techniques the diagnosis of factor or groups are ultimately subjective. Such diagnosis must rely on the expertise of the researcher and on the theoretical underpinning to the work.

7.2.3 Cluster Analysis - The Centroid Relocation Method of Cluster Analysis

Identifying an appropriate method of cluster analysis was important to ensure that analysis could be obtained as comprehensively and effectively as possible. Using the Centroid Relocation Method was deemed to be most acceptable. Wishart (1969) and Youngman (1979a) discuss the method of clustering by relocation in more detail. It's main advantage over Ward's more classic hierarchical method (Everitt, 1974) is the allowance of a greater number of variables to be analysed more rapidly. In the Ward method, comparison of every individual case is included rather than a comparison between the individual and the cluster means. This makes it a lengthy process if there are a large number of variables.

In cluster by relocation method, individual cases are randomly assigned to one of around fifteen groups (the exact number is not critical as long as the clusters can be classified (Youngman, 1979a). Individuals would be re-clustered according to

their proximity to the centroid means, and distance between, inter-cluster means of new clusters. New clusters would be formed agglomeratively by re-iterating the analysis and reducing the number of groups. This reiteration would continue until the respondents finally formed one large group. Clustering of activities can be achieved by multiple analysis of the nature of responses to each, and classifying as before.

Once the reiteration technique is complete, analysis of the number of significant clusters can take place. This is similar to the 'scree test' in rationale, for the determination of factors within factor analysis (Burns and Grove,1993). Although achieved differently, these tests can usefully plot a graph of the error or similarity of groups in order to spot undesirable fusions. However, Youngman (1979a) points out that if a jump on the graph (which would indicate that relatively dissimilar groups have been combined), does not occur, this does not necessarily mean that a classification was bad. Further detail can be obtained from a dendrogram, which also shows successive fusions, and this may be analysed in greater detail.

After classification, clusters can be diagnosed by their within group similarities and between group differences. This may be enhanced by cross tabulation of the groups with other variables. In this work biographic variables were used in light of the literature reviewed in Chapter Two. Cluster groups of individuals were cross-tabulated according to the way they responded to activity domains. Finally, individual item analysis (Youngman, 1979a) determined characteristics within activity groups according to the items included, whilst cross tabulations between

background data and respondents groups determined significance of identified external variables. (Details regarding the software package used to achieve analysis are discussed further in Chapter Eight).

7.3 Methodology issues

An inventory-based checklist questionnaire was administered to students and registered nurses. This enabled students and nurses to rank their perceptions of their involvement in activities identified as comprising the role of the registered nurse in administering medicine to children.

7.3.1 Access, Piloting and Preparation

To gain access to the student sample, I needed to obtain permission from the Head of School of Nursing, and inform course teachers about the study. Additionally since a number of newly registered staff nurses were also to be approached for their perceptions of their current ability, trust managers were contacted to obtain initial access, and the nurses were sent questionnaires by post.

Approval was sought from the local ethics committee for this part of the study. The remit of this group is adopted from the University of Nottingham School of Nursing And Midwifery, Staff and Student Educational Research Ethics Committee Guidelines, and is;

> *...to promote good quality educational research whilst ensuring that it's students and teachers are protected from participation in research which*

> *is unethically designed and from excessive, accumulated requests for participation.* (University of Nottingham, 1995; p1)

A proposal (available by request) was submitted to the ethics committee that demonstrated that students were protected within the following areas;

- Self determination - informed consent was offered and freedom for withdrawal permitted at any time during the study, through non-return of anonymous questionnaires.
- Privacy - Students were protected through ensuring their anonymity . The use of findings would be made clear to the respondents.
- Beneficence - Students would not be harmed in any way as a result of the work being undertaken and the research was likely to demonstrate potential benefit in terms of future courses being better informed. The quality of the research was monitored through higher degree supervision.
- Justice or fair treatment - Students would not be subjected to so much work resulting from the study that it may interfere with their study or free time detrimentally. Sample selection would be fair.

My role as a teacher and a researcher within this project were also highlighted, and it was made clear that I was not at the time of the study involved with the teaching or assessment of students within the sample.

The proposal was accepted with some amendments. The committee initially expressed concern that anonymity may be compromised if replication of the

checklist was undertaken as a before and after measure, misunderstanding the intent of re-using the questionnaire in future work. (This was because the proposal was submitted suggesting that further research may be undertaken). The misunderstanding was discussed and the committee assured that all responses would be sought anonymously. A second concern was raised over the proposed intention to measure students' competence. This was particularly associated with the assumption that students could identify themselves as dangerously incompetent. The problem was an issue associated with wording on the initial proposal and was clarified and wording was changed. The word competence was removed from questionnaires and the emphasis was placed upon 'learning perception'. This allowed the student to identify their 'perceived' ability to be involved within an activity.

Anonymity meant that determination of individual perceptions of dangerous practice would not be possible. Even so, the notion of individual perception of ability for involvement precluded acknowledgement of actual practice. The committee were assured that the questionnaire was not intended to highlight dangerous practice, rather identify areas that students perceived they would currently be unable to involved. It was suggested that students would identify areas that they felt currently unable to undertake (as they were not yet registered and had not completed their course of study). However, perceiving inability to undertake a task competently would not imply incompetent behaviour in practice, since the student may not attempt the task, or may seek supervision. Following a verbal clarification of these issues, the ethical committee agreed to approve the work.

7.3.2 The Pilot Study

The questionnaire was piloted with a small sample of students drawn systematically from the proposed sample frame. Registers of all students participating in the child branch diploma course were obtained and fourteen students were drawn from across the cohorts. This sample was drawn from the same cohorts planned for use with the main study. Students were advised about the study by letter and they received their questionnaires by post ten days later. A return date was identified for fourteen days after this date. A second questionnaire was then sent to all respondents in order to achieve a maximum response rate. The final response rate was encouragingly high, with ten out of fourteen participants returning their questionnaires. Eight students returned the questionnaires within the short time limit allowed and were thus included for analysis.

Pilot questionnaires were analysed in two ways. First, they were reviewed to determine problems the students may have reported in understanding and responding to the instrument. The length of completion time was assessed to evaluate feasibility for use with a large number of students. Further to this review, timing was considered acceptable as no student took longer than 45 minutes to complete the questionnaire and most completed before this time.

Instructions at the beginning of the questionnaire were amended to point out to students they should only write one number in each box. This was because

respondents occasionally included two numbers. Whilst this may have been a more accurate representation of the way they were feeling, it was creating more response groups that would have incurred complications in relation to the analysis. The front page and title was revised in order to make the questionnaire more readable, after criticism that it appeared complex. This amendment also allowed the questionnaire to be relevant for a small sample of newly registered nurses who were also proposed for inclusion. Finally, for ease of analysis, identifying code numbers were applied to the biographic categories.

Second, the pilot data was used to test the effectiveness of data logging and analysis, to review changes to the existing CARM programme (Youngman, 1976) revised to accept 201 variables (plus eleven biographic variables) and refine proposed tests for use with the main sample. The sample of eight cases included was too small to obtain measures of significance, but I learnt through the pilot analyses about logging and coding the data for effective computation. In light of changes made to the biographic section of the questionnaire, the computer programme was amended to include more variables for cross tabulation and comparison. Questionnaire reliability was appraised in terms of ability to obtain complete data sets without wearing out the respondents, or confusing them. No questions were consistently left unanswered.

Initial validity of the measure was not assessed, however, the measure had been subjected to extensive panel review in order to ascertain the validity of items included as part of the role of the registered nurse. Validity of the measure in determining its use in gaining the perception of students relating to role of the

nurse in administering medicine to children was addressed by allowing the students space at the end of the questionnaire in which to add their own comments. These were evaluated and modifications made accordingly.

One limitation of the pilot study was that no staff nurses were included within this sample. Their questionnaire held slightly different biographic information (with twelve variables) and this was to prove an unforeseen problem in analysing the main study.

7.4 Main study

In order to gain access, I visited all student cohort groups within the target population, informing them about the proposed study, and illustrating how they may be able to participate if they wished. For those in the child branch, short informal meetings were held prior to commencement of afternoon sessions and students were invited to attend. For students in the common foundation programme a separate meeting was held during a lunch break and students were invited by letter to attend.

Those attending the meetings also included students who had participated in the pilot study. This was useful since they could give first hand experiences of completing the questionnaire and help their peers to understand what was required. At the end of the meetings students were given a letter of information Students were advised that they would receive a questionnaire through the post and that returning the completed questionnaire would indicate their consent for their

response to be included in the study. Students were advised about ethical considerations, and the ethics committee acceptance of the research proposal.

Students were informed that their responses would be anonymous and that they did not have to complete the questionnaire if they did not wish to participate. Two students unable to attend were contacted via the course tutor and a letter of information about the study sent to them. Finally, registered nurses included in this stage of the study were sent a questionnaire by post with an inclusive letter of information. After all of the students had received information about the study, questionnaires were administered by post. There has already been debate in this work about the relative merits of postal versus administered or hand delivered questionnaires (LoBiondo-Wood and Haber, 1990; Burns and Grove, 1993). However whilst it is impossible to know who actually responds to a postal questionnaire (and this could be a weakness of this method), lay individuals with no understanding about medicine administration would be unlikely to be able to contribute.

After exclusions for course interruptions, 116 postal questionnaires were administered to all students attending a diploma course leading to a children's qualification in one school of nursing and fifteen staff nurses undergoing preceptorship following recent qualification (n=131). A second trawl followed up six weeks after the first mailing. Sixty eight questionnaires were finally returned, a return rate of 51.9%. Two of these were subsequently found to include a large volume of omitted data and were thus not considered usable. 66 data sets were thus finally included for analysis.

Characteristics of the sample were identified following evaluation of the literature related to medicine administration ability and student nurses learning patterns (see Chapter Two). The following areas were explored:

- Gender of respondent
- Position of respondent in the course (cohort) or date of qualification
- Type of course attended
- Past nursing experience
- Past academic qualifications

The data illustrating the biographic characteristics can best be summarised in four tables. The majority of respondents (n=63) were women, with only three men responding to the questionnaire. This is representative since the proportion of men to women in the sampling frame was small (five men out of the total sample frame of 131).

Questionnaires were returned from across the student cohorts from those to those near to qualifying (Cohort 1) to those that were newly entering pre-registration courses (Cohort 6). Shortened post registration course students are indicated within the cohort that they are incorporated, and an additional 'A' is included on their code. A further group contained children's nurses who had registered in the past six months (Table 8).

In the total sample, two respondents had not completed their course of preparation at the study university (Table 9), and twelve respondents were undertaking, or had undertaken a shortened post-registration conversion course following a previous first level qualification in another branch of nursing (Table 8). Respondents presented with a range of experience from none, to those with experience of being a ward sister in a different branch area of nursing (Table 10).

Table 8 POSITION OF RESPONDENTS IN STUDY PROGRAMME (IDENTIFIED BY COHORT ENTRY NUMBER (CEN).

CEN 1	CEN 2	CEN 3	CEN 4	CEN 5	CEN 6	CEN 1A POST REG	CEN 2A POST REG	NEWLY QUAL	NOT KNOWN
7	3	9	8	6	11	5	4	10	3

Table 9 TYPE OF STUDY PROGRAMME ATTENDED

PRE-REGISTRATION DIPLOMA (NOT LOCAL)	PRE-REGISTRATION DIPLOMA (LOCAL)	POST REGISTRATION CONVERSION COURSE
2	52	12

Table 10 PREVIOUS NURSING EMPLOYMENT EXPERIENCE

SENIOR STAFF NURSE (NOT CHILD)	SISTER (NOT CHILD)	STAFF NURSE	STATE ENROLLED NURSE	NO PREVIOUS EXP	OTHER EXP ALLIED TO HEALTH CARE	NOT KNOWN
2	5	5	1	39	2	12

Table 11 ACADEMIC QUALIFICATION PRIOR TO COMMENCING THE DIPLOMA IN NURSING

O LEVEL/ GCSE'S	A LEVELS	DIPLOMA	DEGREE
14	39	11	2

7.4.1 Strengths and Limitations of the Sample

The response sample, was smaller than optimally desired and this may be viewed as a limitation, as only just over half of those eligible for inclusion were represented (51.9%). Although a greater number of responses would have increased the validity of the work, a response greater than 50% is deemed acceptable for postal questionnaire (Burns and Grove, 1993) and a strength was that the sample was homogenous in relation the inclusion of most variables of interest to this work. The effects of non-response bias cannot be ignored, however, since nearly half the eligible sample did not return questionnaires. Strategies for exploring non-response bias may include follow up interviews by researchers especially trained to establish variables of interest. (LoBiondo-Wood and Haber, 1990) However, this would be difficult to achieve in this case and preserve anonymity, and may be unethical to pursue students further at this stage because of a risk of coercion, since the return of the questionnaire was deemed to imply consent for inclusion.

Although the data collection tool considered literature from an international theoretical context, the data used in it development has dominantly been derived from was selected from one study school and its affiliated trusts, this is considered a limitation in terms of external validity. However, the findings of this may offer face validity for others involved in similar situations. The inclusion of nurses who had been prepared for a role elsewhere did not meet with any difficulties related to their response and, although the numbers included were small (two nurses in this stage, plus two in the staff nurse interviews) this transferability was acknowledged as important.

Measures

A questionnaire was designed which included items established to be components of a role undertaken by registered nurses in administering medicine to children. It was constructed to allow students to describe their perception of their personal involvement in relation to each item. This is a new measure and there has been no previous attempt documented that identifies specific criteria for a role in medicine administration to children. Also using the inventory-based derivation of activities, this work represents a unique attempt to compare this role with students' and nurses' perceptions of personal involvement. Each item could be evaluated by the respondent, and allowed them to return a response which described their own perception to either perform the activity item unaided, perform the activity item with supervision, or decide they could not perform the item.

Data generated allowed the researcher to embody the main concepts associated with the fourth aim of this research in assessing how students and newly registered nurses perceived their involvement in each of the 201 activities comprising a registered role. A section asking about specific biographic characteristics was included at the commencement of the questionnaire, which allowed comparison of key characteristics deemed important as variables within the existent literature with the findings of this work. It additionally allowed comparison of biographic characteristics of respondents who clustered similarly.

Identification of student cohort or nurse qualification date was particularly useful in attempting to determine whether student perceptions of their involvement

differed according to their seniority within the course. This feature also enabled assessment of whether those completing the course of study perceived they were able to be independently involved in all aspects identified as characterising a registered role.

In developing the measure, review of similar inventory based questionnaires indicated that appraising 201 items with a possible one of three responses was likely to be feasible within a reasonable time allowable (Youngman, 1980; 1988). However, since previous work in this area had conventionally requested only one of two possible responses rather than three, a time check was included in the pilot questionnaires. Selection of a three-response format was essential in this work because information was required which indicated whether individuals felt competent to perform an activity alone, with supervision or not at all.

The questionnaire was presented as a five-page booklet in A5 format, allowing ease of handling and postage, but offering a sense of shortness as well as clarity in reading. Use of Bell's (1993) guidelines for the presentation of questionnaires facilitated the final appearance of the questionnaires to be sent to students.

Instructions for completion were given at the beginning of the questionnaires and these took the form of a brief discursive paragraph including definition of the main possible responses followed by a bulleted summary instructing the respondents in point fashion how to complete the checklist questionnaire. Reiteration of the instructions in two formats aimed to enhance the readability and appeal to a wider number of respondents. The second page contained closed questions requesting

pertinent biographic information. Students were asked to identify their cohort entry code (or for staff nurses, date of qualification), and identify past relevant employment or academic qualifications. Respondents were also asked to identify whether they were male or female. This section was coded to enable rapid analysis.

The rating scale commenced on page three. Activity items were grouped in batches of five, (and one in six) with spaces between for ease of reading and response (Burns and Grove, 1993). Twenty-five items were included per page to culminate in a booklet of seven pages in length. To prevent response set biases (Topf, 1986; LoBiondo-Wood and Haber, 1990) and encourage respondents to consider each response individually, the activities were systematically scrambled from the original groups (see Chapter Five), so different topics were addressed in each five-item set. The A5 presentation ensured that no more than ten sets could be viewed at any one time, and the rating scale was written in neutral way, that aimed to minimise any inference of social desirability. Inventory items were presented on the left-hand side of each page with a distinct box on the right to enter a response (See Appendix 4). Finally, the questionnaire thanked respondents for their participation and included a blank section at the end in which they could record any comments about the questionnaire or any aspects that they felt may have been missed in the inventory section.

For the ease of analysis and to make the questionnaires appear more reader friendly, the booklets had coloured covers. The colour of the booklet cover was changed at different stages of use throughout the whole research study and with

different client groups. A simple index of these different colours allowed instant recognition of the source of individual questionnaires.

Questionnaires were mailed to respondents with a pre-paid envelope enclosed, to return the completed booklet to the researcher. Data was collected on two occasions to establish the best possible response rate in the time permitted. When the questionnaires were returned, the data contained in each was transferred initially to a computer file as a series of 213 sequential numbers. The first twelve numbers related to biographic details and the subsequent 201 responses related to the checklist items. Each questionnaire thus creating one response set. In order to ensure that every response set had the same number of responses and to ensure parity of position of each response, any items that elicited no response were allocated a nought as suggested by (Youngman, 1979a).

A decision had also to be taken where respondents persisted in placing more than one response per item. For parity it was decided to opt for the minimum number selected, since the questionnaire was aiming to assess actual perceived ability rather than aspired ability. (So, if the student responded by putting a two and a three in the box, they indicated that they could complete the item with supervision and may be able to perform the task unaided. The two would be recorded, indicating that this was the minimum that student perceived they could always perform). Once complete, the data was transferred to the statistical analysis programme, (This is further discussed in Chapter Eight).

7.4.2 Issues of Reliability and Validity

The material included in the inventory had already undergone rigorous consideration regarding content validity as a criterion to determine the components of a registered nursing role in administering medicine to children. The effectiveness of these constructs combined with the scoring instructions in determining students perception of this role was further checked during the pilot study, where the students were asked to comment about the ease by which they could understand what they were being requested to do.

The pilot study was used to clarify any ambiguity in the instructions to the students; to identify items that were felt to be ambiguous in relation to scoring; and to determine the acceptability of the tool generally. As a result of the pilot study the title of the questionnaire was changed and wording of some of the items was clarified. Students were happy with the wording of the instructions, but a minority (two) did try to offer more than one response in some areas, perhaps indicating that they were unhappy with the forced choice nature of the response. In light of the small number of respondents doing this and that not every response was answered in this way, the problem was not pursued with a view to altering the scoring mechanism. However, a clear reminder was added to the instruction sheet to indicate that only one response should be indicated. A decision was also taken at this time to select the lower response rather than invalidate any future response in this way.

The main strength of the development of this measurement tool lies in its content validity in terms of assessing learning perception against real world constructs,

and the adequacy of the sample in the spread of individuals asked to appraise their own learning ability.

A weakness of the rating scale was that it only offered a limited forced choice. This was essential given the sample size but may not indicate areas between the raters that may have been of interesting to note. (For instance, whether students felt able to understand information but not sufficiently practised to attempt the item even with supervision) Similar points were considered at length by Daines (1985) when he proposed a self-evaluation strategy for pharmacy students. Daines found that his students had difficulty applying his four point limited forced choice scale and ultimately expanded the choices to include a inter-quartile continuum between raters. This analysis was however achieved descriptively and was simply concerned with whether students could effectively self-evaluate in relation to a small number of areas of their curriculum on a weekly basis, rather than appraise their perceived ability in a large number of items. Whilst this could be perceived as a weakness of the design of the data collection tool, the students generally found the task manageable and elicited a 'closest' response.

Finally, external validity outside of the study university and its affiliated practice areas may be limited. Face validity may be accepted, and theoretical construct validity derived from the existing literature is broadly supportive of the findings of practitioners and members of the expert panel. The previous experiences of respondents who have recently worked outside of the locality should be taken into account in strengthening external validity.

7.5 Summary

Fifty eight students participating in the Diploma in Nursing leading to qualification to part fifteen of the UKCC professional register during the study period returned self-perception questionnaires. 56 of these were useable. Ten children's nurses who had recently registered to part fifteen of the UKCC professional register and who were currently receiving preceptorship in their professional role also completed the questionnaire in order to compare pre-registration and post registration perceptions. Questionnaires included items about demographic variables of interest that derived from the literature review, as well as a three- point rating scale of 201 items identified as characterising role of the nurses in administering medicine to children. In Chapter Eight, the analysis of findings will be presented.

8 Chapter Eight - Questionnaire Results and Analysis of Findings

8.1 Analysis and the Research Aim

Chapter Eight presents the results found within data collected using the survey questionnaire identified in chapter seven (and highlighted within the research design in Figure 4). This addresses the second research aim:

> *To evaluate students' perceptions of their involvement in administering medicine as compared to activities comprising the role of a registered nurse.*

Within this evaluation I was interested to identify whether biographical features, proposed within the existing literature as influential in students ability to calculate medicine were influential in their perceptions of the wider practice of administering medicine to children (See Chapter Two). If this were the case then consideration relating to understanding mathematical knowledge must remain a core element in preparing students for practice in this area.

I also wanted to evaluate whether other activities could be clustered and characterised according to the way students perceived them. In some respects this voyage of discovery was more important, since the calculation issues have already been researched and conclusions have been drawn. The greater understanding of how students perceived all aspects of medicine administration could be much more influential in the way that preparation may be tailored. Increasing support into activities with perceived low involvement, and offering better knowledge for negotiating the parameters of pre-registration and registered practice were two

outcomes that these results could potentially offer. Finally, I wanted to know whether student's perceptions changed as they moved through their course of study, and if so whether any pattern of their development could be observed.

The results identified five activity domains that were perceived significantly differently by respondents. These were characterised by the items contained within them and by the student response to them. Further, the respondents were also found to cluster into five distinct groups. These were characterised by the nature of responses to each activity domain, and by the characteristics of group members. This information enabled the evaluation of the students perceptions of their involvement in relation to identified criteria for the role of the registered nurse in administering medicines to children.

8.2 Conducting the Analysis

A computer programme was first required that could perform the analysis. Whilst there is much written about packages such as Statistical Package for Social Sciences (SPSS) (Burns and Grove, 1993; Dempsey and Dempsey, 2000). The programmes included are wide-ranging and not specifically designed for use with multivariate data. One of the disadvantages of using large flexible packages can be that usage becomes increasingly complicated (Youngman, 1979a). With this in mind, the 'Cluster Analysis by Relocation Method' (CARM) programme was selected (Youngman, 1976). This programme for multivariate analysis was originally derived from Wishart's (1969) CLUSTAN 1A Package and was modified by Youngman (1976) to enable the completion of analysis using thirteen

possible inter-cluster similarity measures to assess up to 200 cases in one single data run. The programme had to be further modified for use with this work since the normal maximum numeric measures would be 200. On this occasion when the cases were assessed as variables, there were 201 measures and twelve biographic variables. This was achieved by altering the initial coding to allow inclusion of 213 numeric variables. In relation to the validity of such a modification, this was discussed with the author of the CARM programme at the time of questionnaire development. It was decided that this small increase in variables would not affect validity of the analysis, as the initial 200 was an arbitrary cut off point.

The Programmed Methods for Multivariate Data (PMMD) Package (Youngman, 1976) was specifically written for analysis of multivariate data, and enjoys good access through the university mainframe system. Additionally, it can be run on a personal computer. CARM (Youngman, 1976) was selected because it allowed the analysis of the 201 activity variables quickly in one single computer run. It also offered scope for a detailed analysis of group characteristics to be undertaken. This included comparison with identified activity domains to determine clusters of students perceiving greater or lesser involvement in particular types of activities. Additionally, respondent biographic characteristics cross-tabulated with those of other cluster members. Significance of relationships was determined using chi-square. This would allow "...determination of whether observed frequencies differ from expected frequencies." (Dempsey and Dempsey, 2000; p363) Finally, biographic characteristics were identified as relevant from the literature review, and appraisal of their significance in this work will serve to enhance theoretical construct validity. The CARM programme also allowed the

possibility of transposition of the data matrix. This was useful as it enabled clustering of activities according to the similarity of their responses by the sample, (Youngman, 1979a). These clusters, (activity domains) could then be explored in relation to their components using a second programme from the PMMD suite, Item Analysis and Test Scoring (IATS). This programme enabled basic distribution statistics for each activity item based on the scores obtained from each respondent. IATS also has the benefit of allowing assessment of sub-scale reliability in relation to internal consistency, by determining Cronbach's alpha coefficients in relation to each cluster. Domains that may need further development to increase involvement will be of particular interest, as will those in which respondents feel highly involved.

8.3 Methodology Issues

Data was organised into database on the computer (Figure 5). Missing variables were allocated a zero, in order to maintain the position of each response with the sets. This figure was the least used within the overall data set with only two possible expected zero's in the ID code and in the cohort entry/qualification date. These did not interfere with the use of zero for non-entry data because in each case there was no other possible answer. Within the 213 variables, the first twelve were used for cross tabulation comparison with student response groups and determination of significance. The remaining 201 items required use of more complex statistical methods.

Figure 5 DATA CODING EXAMPLE

ID			M/F	CoH				Pr	N	AQ	PE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
0	9	9	2	0	3	9	5	1	1	2	6	1	1	1	1	1	1	2	1	2	1	2	1	1	2	2	3	2	3	3	1	3	2	1	1	2	1	1	1	2	3	3	2	2

33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
2	1	2	1	3	3	2	1	1	1	2	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0

72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110
1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	2	1	2	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1

111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149
1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	3	0	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	2	1	3	1	1	1	1

150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188
1	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	3	1	1	1	1

189	190	191	192	193	194	195	196	197	198	199	200	201
1	1	1	1	1	1	1	1	1	1	1	1	1

Key ; ID = Case identity code; M (1) F (2) = Gender; Coh = Date of Course Entry/Qualification; Pr = Type of course pre (1) or post (2) registration;
N = Course undertaken in this university (1), or not (2); AQ = Previous academic qualifications, GCSE (1), 'A'level (2), Diploma (3), Degree (4), Higher Degree (5)PE = Previous practice experience in children's nursing Sister (1) Senior Staff Nurse (2) Staff Nurse (3), Enrolled Nurse (4) Other (5) None (6).1,2,3,4...201 Responses to variables; No response (0); Cannot perform activity (1); Can perform activity with supervision (2); Can perform activity unaided.(3) (For activity items see Appendix 5)

8.4 Results

The results are presented sequentially in three parts relating to the research questions. In conclusion, the findings are drawn together in light of the research questions posed, and key issues identified for further discussion later in this work.

8.4.1 Part One - The Respondents

This part considered the respondents themselves and attempted to evaluate whether biographic characteristics influence perceived involvement. Individual case responses to items were examined, and the data were explored for biographic similarities of cases responding in a similar way within and between clusters. First, in order to determine how the sample responded to the activities included within the questionnaire, an initial analysis using CARM created fusion of respondents into clusters according to their responses. This was performed to classify respondents according to the similarity of their response rather than to identify scores. Once this was achieved, the fusion diagnosis demonstrated five distinctly different clusters..

The cluster groups can be described according to their mean involvement in the activity domains. It should be remembered that the samples responses to the questionnaire could be:-

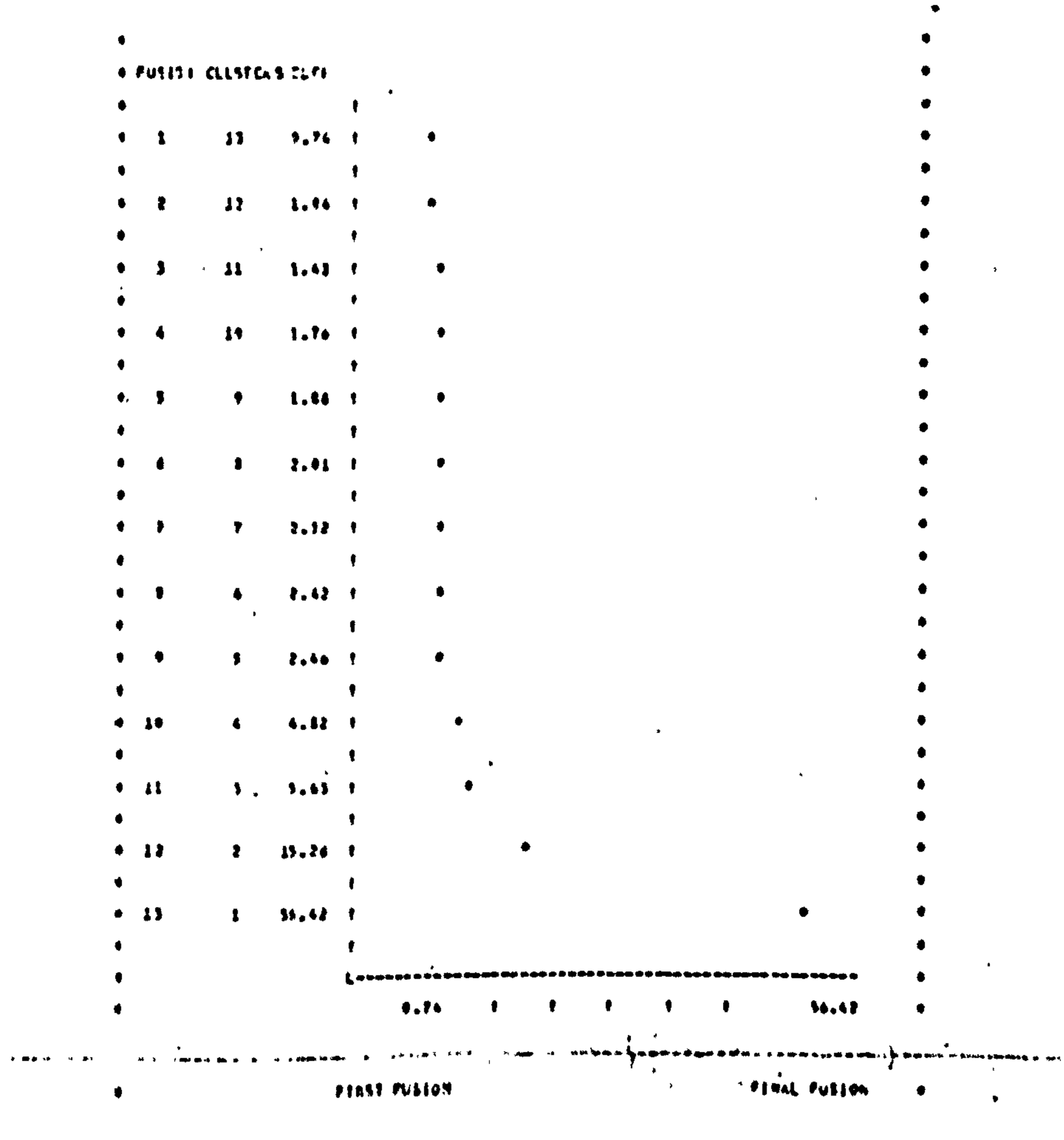
1 = Could not undertake that activity item

2 = Could undertake the activity item with supervision

3 = Could undertake the activity item unaided

The first inspection of the data suggested five groups that were distinctly different. Although the clusters have been labelled 1-5 in this analysis, this is purely for differentiation rather than with any intent to rate or rank them. The clusters are, at this stage simply different from one another.

Figure 6 FUSION PLOT ILLUSTRATING DIAGNOSIS OF ACTIVITY CLUSTERS



The following biographical variables were examined:-

- Previous qualification level (O level or GCSE, A Level, Higher level including Diploma or Degree
- Previous employment experience (Registered nursing or none)
- Type of respondent (Pre-registration student or previously registered)
- Student Position in the programme (with children's nursing practice or without).

One remaining feature, that of gender was not examined because of the low numbers of male respondents. Since there were only three out of the 66 case responses, it was felt that no meaningful assumptions could be made in relation to the cluster groups.

The results were tabulated into contingency tables according to the variables of interest, and were initially inspected descriptively. Chi square technique was used to determine statistical significance of the characteristics within each group. This technique was considered appropriate, because the data under scrutiny was nominal, and thus discrete in nature. The respondent clusters also varied in sample size, but did not all achieve sufficient numbers to consider that they were normally distributed.

Qualifications were included in a 3x5 contingency table including all respondents (n=66). The qualifications of respondents were evenly distributed across the

clusters. Analysis using Chi-square confirmed this offering no statistically significant difference between clusters (Table 12).

Students should be encouraged to socialise into nursing practice. Those who are allowed may be able to apply their learning and skills most effectively and gain confidence in their practice (Eraut et al. 1995; DOH, 1999). However, the effect of this experience has not been examined in relation to confidence in specific practice skills. Past registered nursing employment experience of students attending the course was therefore compared to those with no experience (n=52).

Two respondents were omitted from this analysis as they had identified other previous experiences but not clarified the nature. The post registered students who have previously been employed may not have had as much experience of working with children as some students who had no employment experience, as they have been previously registered in a different area of nursing. Table 13 shows the distribution of students with previous nursing employment experience as compared with those students who had none. Using Chi-square, the difference in response according to past nursing employment experience between the two groups was found identified as significant. (Chi-square Value 20.63, df 4 p=<0.01).

Respondents are thus influenced in their ability to involve themselves in activities related to medicine administration to children, by their role in performing medicine administration activities. This experience did not however, need to be with children. This supports the external validity of the criteria for a role in medicine administration.

Table 12 DISTRIBUTION OF RESPONDENT'S QUALIFICATIONS ACROSS CLUSTERS.

CLUSTERS	1	2	3	4	5
RESPONDENTS WITH 'O' LEVELS OR GCSE'S	5	2	2	1	4
RESPONDENTS WITH 'A' LEVELS.	9	3	9	10	8
RESPONDENTS WITH DIPLOMA OR DEGREE LEVELS	2	1	5	2	3
TOTAL NUMBER OF RESPONDENTS (N=66)	16	6	16	13	15

Table 13 DISTRIBUTION OF STUDENTS ACCORDING TO THEIR PREVIOUS EMPLOYMENT EXPERIENCE

CLUSTERS	1	2	3	4	5
PREVIOUS NURSING EXPERIENCE AS WARD SISTER, STAFF NURSE OR ENROLLED NURSE	4	0	0	0	9
NO PREVIOUS NURSING EMPLOYMENT EXPERIENCE	8	5	10	11	5
NUMBER OF RESPONDENTS (N=52)	12	5	10	11	14

Table 14 DISTRIBUTION OF RESPONDENTS ACCORDING TO STUDY PROGRAMME

CLUSTERS	1	2	3	4	5
PRE-REGISTRATION PROGRAMME	13	6	16	13	6
POST REGISTRATION PROGRAMME	3	0	0	0	9
NUMBER OF RESPONDENTS (N=66)	16	6	16	13	15

Table 15 DIFFERENTIATION ACCORDING TO OPPORTUNITY TO ADMINISTER MEDICINES TO SICK CHILDREN

CLUSTERS	1	2	3	4	5
LIMITED CHILDREN'S PRACTICE	3	6	16	9	0
GREATER CHILDREN'S PRACTICE	8	0	0	3	8
NUMBER OF RESPONDENTS (N= 53)	11	6	16	12	8

The influence of past experience is further supported in Table 14, which illustrates the distribution of respondents (n=66) across the clusters according to the study programme followed. The respondents were shown respond significantly differently according to the programme of study they were completing, (Chi Square value 25.41 df 4 p=<0.01). The post -registered students are most likely to have had a comprehensive previous nursing experience. (Newly registered nurses all followed the pre-registration course).

Table 8 demonstrated the distribution of respondents across the cohorts assessed through the questionnaire. Initial inspection of the data indicated that more senior pre-registration student intakes appeared to respond similarly to the post-registered intakes and also to the newly registered group. These groups would have had greater opportunities to experience and practice administering medicine to children. To determine more clearly whether changes occurred within the programme, the groups were represented in a contingency table according to whether they would have had greater opportunity to practice nursing skills in relation to medicine administration to children. Medicine administration opportunities would be limited in the early part of the course and not necessarily related to children. The table was arranged so that intakes from 1 and 2 and 1A and 2A who had experience of nursing sick children were compared with those in 3,4,5,and 6, who had limited experience. Registered respondents and those who did not identify their cohort were excluded. As shown in Table 15, the two groups were significant in their differences. (Chi-Square Value 33.729 (df4), significant

at $p<0.01$) From this analysis the following can be concluded in relation to the sample group.

Respondents clustered significantly differently according to:

- Their past nursing experiences,
- Whether they were undertaking a post-registration or pre-registration programme of study and,
- According to whether their current position on the study programme had allowed opportunity for experience in the administration of medicines to sick children or not.

There was no significant respondents according to their past academic qualifications. It is possible therefore, to describe each cluster of respondents according to their biographic features. This will be further included in the summary of this chapter when clusters will also be described according to their responses to the activity items.

8.4.2 Part Two - Analysis of Activities

The second part evaluates whether activities can be characterised according to the way students perceive them. Respondents were asked how they perceived their involvement in each activity within the questionnaire.

They could respond that they were able to perform the activity:

- Unaided (by writing 3 in the box)
- With supervision (by writing 2 in the box)
- Or could not undertake the activity at all, (by writing 1 in the box)

In an initial inspection, data were again clustered using CARM. On this occasion the data matrix was reversed to allow clustering of activities into domains. Initial analysis of activity items using CARM identified the fusion plot illustrated in Figure 6. Diagnosis of the fusions according to criteria presented by Youngman (1976) indicated that fusion into five cluster groups appeared most critical. These groups (or activity domains) were analysed in greater depth.

To identify more about the activity domains, constituent activities were counted and mean involvement scores for each domain were attained using individual item analysis and test scoring (IATS) (Youngman, 1976). Finally, because of variations in sub-group size, The 95% Confidence Interval for the Mean (CI) was calculated using the Standard Error. This identified the parameter for each domain in which there was a 95% probability of finding a population mean. This was accepted as a way of comparing domain mean scores.

The IATS enabled the analysis of individual item mean scores around the domain mean score. These are included in Table 16 which compares the each domains Mean Score, Standard Deviation and Standard Error, and the 95%(CI). This allowed identification of the dispersion of the item mean scores around the domain

mean. They can also be compared with the standard error and the 95% CI for the mean, allowing inference to a wider population (Burns and Grove, 1993). For each domain, the 95% CI for each domain mean is small and is mostly discrete from other domains thus indicating high likelihood that population means would differ between groups (Rivers, 1994). The domains can therefore be confidently ranked according to the mean level of involvement in each item reported by respondents. Table 16 demonstrates differences between the means of each group, but within domains the range of scores are similarly broad. This would suggest that some respondents varied in their responses to some items in each domain. This is also supported by the Standard Deviations.

Figure 7 FUSION PLOT ILLUSTRATING DIAGNOSIS OF RESPONDENT CLUSTERS

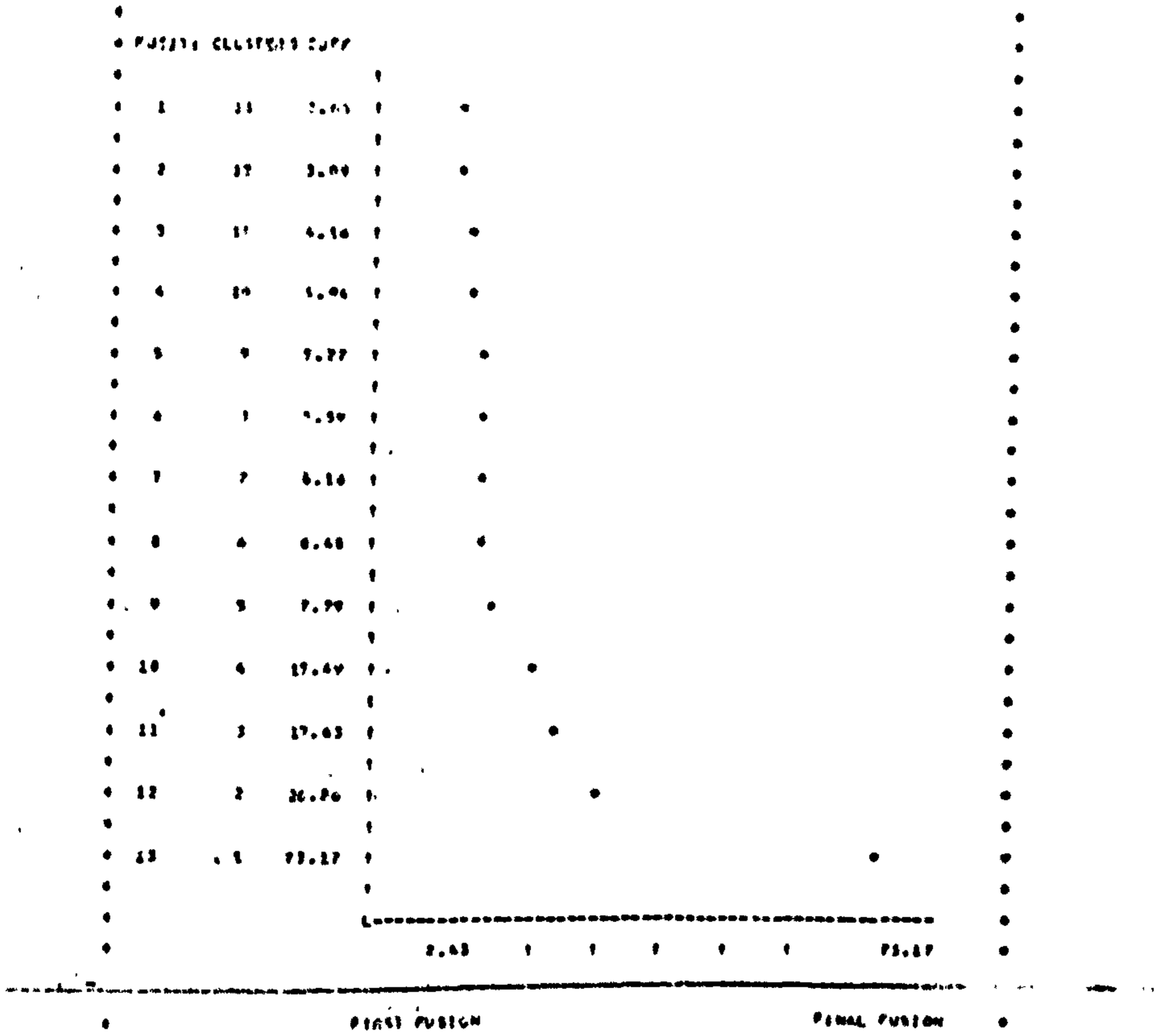


Table 16 ACTIVITY DOMAINS INDICATING DISPERSION OF INDIVIDUAL ITEM MEAN SCORES AROUND THE DOMAIN MEAN, AND MEASURE OF INTERNAL CONSISTENCY ESTABLISHED USING CRONBACH'S ALPHA COEFFICIENT (ORIGINAL CLUSTER NUMBERINGS ARE BRACKETED)

Activity Domain	Number of Activities	Range	Domain Mean Score	Standard Deviation (SD)	Standard Error (SE)	95% CI for the Mean	Cronbach Alpha
1 (3)	16	1.375-3.00	2.755	0.3238	0.0399	2.6751-2.8343	0.949
2 (1)	70	1.01-3.00	2.377	0.5373	0.0661	2.245-2.510	0.988
3 (2)	62	1.00-3.00	2.126	0.6490	0.0799	1.966-2.285	0.949
4 (4)	44	1.00-2.98	1.828	0.6429	0.0791	1.6702-1.9863	0.985
5 (5)	9	1.00-2.75	1.560	0.4646	0.0572	1.446-1.6748	0.920

After considering initial trends, each individual activity was identified, and the mean scores examined in order to describe the nature of the activity domains. Youngman (1979b, p37) point out that whilst statistical criteria are valuable in identifying possible cluster analysis solutions, final choice must rest on interpretability. He adds:

The simplest way to interpret clusters of operations (activities) is to list all the operations forming each activity. Inspection of these lists should enable the nature of each activity to be decided and a suitably descriptive name to be found.

Individual activities are included in Appendix 5. They are referred to in the following discussion that identifies characteristics of each activity domain.

It was important to consider activity items that typified or characterised each domain. Typicality may be partially defined by having an activity involvement score with closest proximity to the domain mean and the greatest distance from the mean of other domains. However this is only one measure, and the derivation of the item mean is from a profile of 66 scores. If this profile was dissimilar to the rest of the group, the item mean may be close to the domain mean but the reliability co-efficient of the group may still be increased if that item were removed. Imposing a threshold value may have been useful in improving definition by removing items that were peripheral to each activity domain (Youngman et al.1988). However, the domains were highly internally consistent, and the removal of many items would reduce the descriptive interpretability of each activity domain by narrowing the focus. This would be particularly an issue in activity domains with a small number of items.

Whilst inclusion is important, it is nevertheless important to note those activities that may affect homogeneity thus decreasing reliability of the activity domain. Item analysis allowed the determination of individual items that reduced homogeneity significantly and thus lowered the domain alpha reliability scores. A small number of items were identified within the IATs as significantly reducing the domain alpha ($p<0.05$) and these are marked thus* (See Appendix 5).

In the discussion relating to each domain the five activities in each group that have the closest mean involvement scores are illustrated as typical of the domain. Any

items identified by asterisks however, were not included. It is important to understand how the respondents view all the items. In Appendix 5, items have therefore been displayed and individual item means are indicated.

The next step involved comparing activities with the categories identified following the original staff nurse interviews. Each activity domain was described by the nature of included items, so individual activities needed to be analysed. This was first attempted by comparing the categories identified after the analysis of staff nurse interviews (identified in Chapter Five). Activities from these categories were however, evenly spread across the activity domains identified by the clustering procedure. This has implications for practice since it would indicate that even quite new nurses perceive that they are able to undertake some activities in all categories of the role criteria. However, another means had to be established which would allow diagnosis and description of the domains.

Next, I was concerned with reviewing skills and knowledge for practice involvement. A return to the literature review and the underpinning theoretical framework for this research, prompted the idea of reviewing skills and knowledge that may be required to become involved in activities within each domain. Areas of high involvement, may be associated to where barriers to achieving role function are limited, whilst domains with low involvement may occur where respondents perceive they are unable to perform the role. By analysing the five activity domains in this way, four areas appeared to emerge, two concerned with knowledge for caring, and two concerned with skills for practice.

These were:

- Mathematical Knowledge
- Pharmacological Knowledge
- Practical skill (incorporating basic nursing skills usually included in the common foundation and early part of the branch programme of the Diploma in nursing)
- Advanced Practical Skill (incorporating nursing practice skills usually included in the later part of the Diploma in nursing course or upon qualifying).

To refine this emerging observation, I reviewed each activity, and they were marked according to the knowledge or skills that would be required in order to achieve the item competently. Many activities could be allocated more than one characteristic and so these groups were not mutually exclusive. It was accepted that this exercise was subjective, but served as a model to describe characteristics of each domain. Another nurse child branch teacher, used to teaching administering medicine was asked to review the analysis in order to improve inter-rater reliability in this assessment. This is suggested to be useful by Brink (1991) in helping to improve reliability of interpretation. A few discrepancies were discussed and a solution agreed. Some caution is required in accepting the finer detail of the results because of the variation in sample size for individual domains and the subjective nature of the analysis. However, differences in the type of knowledge and skills required to undertake items do appear to vary between activity domains. A further consideration relates to Roy's (Roy and Andrews,

1991) definition of role behaviours. Roy identified that all roles include a requirement to perform both instrumental (operational) and expressive behaviours – those that require feelings and attitudes within them. Examination of the activities using the above considerations yielded the following profiles.

Table 17 PROFILES OF ACTIVITY DOMAINS

ACTIVITY DOMAIN	NUMBER OF ITEMS REQUIRING MATHEMATICAL KNOWLEDGE	NUMBER OF ITEMS REQUIRING PHARMACOLOGY KNOWLEDGE	NUMBER OF ITEMS REQUIRING BASIC PRACTICAL SKILL	NUMBER OF ITEMS REQUIRING ADVANCED PRACTICAL SKILL
1 SIMPLE DOING (N=16)	0 (0%)	1 (6.25%)	16 (100.0%)	0 (0%)
2 DOING/ COMMUNICATING ACTIVITIES (N=70)	3 (4.28%)	34 (48.57%)	6(92.85%)	2 (2.85%)
3 SPECIFIC CARING ACTIVITIES (N=62)	8 (12.62%)	41 (66.12%)	37 (59.67%)	18 (29.03%)
4 DECISION MAKING/TEACHING ACTIVITIES (N=44)	9 (20.20%)	24 (54.45%)	8 (18.18%)	28 (63.64%)
5 ADVENTURING ACTIVITIES (N=9)	3 (33.3%)	7(77.77%)	1 (11.1%)	8 (88.88%)
TOTAL NUMBER OF ITEMS IN EACH GROUP	23	107	127	56

Domain One – Simple Doing Activities

Number of Activities 16; Cluster Mean Score 2.75; SD .3238; SE.0399; Range 1.37-3.00; 95% CI for the Mean 2.675-2.834.

Typical Items

- Use reference sources to gain information about medicines
- Ensure that the medicine is in date
- Dispose of equipment used to give a medicine
- Administer oral medicine from a spoon
- Ask other nurses for advice medicines.

Items in activity domain one require practical skills with limited pharmacological knowledge and no mathematical knowledge. The tasks in this domain appeared to be able to be undertaken without initiation necessarily, and could result from instruction by a more experienced practitioner. The core activities included require primarily instrumental behaviours with little requiring expressive considerations (eg Ensure medicine is in date (Mean 2.77). Those items scoring close to the domain particularly illustrate this feature, and can be compared with the items whose mean scores fall outside of the 95% confidence interval for the cluster mean. Expressive behaviours occur at both parameters of the confidence interval where involvement is low the respondents would have to make care decisions eg ensure that the correct patient receives treatment (Mean; 2.62) or implement hospital policies relating to medicine administration (Mean; 2.61). Where involvement is perceived to be high, expressive behaviours included relate

to the learners own ability eg Decide on own ability personal capability to give a medicine, (Mean 2.80)

This domain is characterised by simple doing activity and is named as such.

Domain Two – Communicating and Doing Activities

Number of Items 70; Cluster Mean Score 2.377, SD .5373; SE .0661: Range 1.01-3.00; 95% CI for Mean 2.245 to 2.510

Typical Items

- Observe legal aspects of giving medicines
- Give the correct dose of a prescribed medicine
- Give medicine via an oral syringe
- Retrieve medicine from a place of storage
- Ascertain whether a child has any allergies.

In this domain, some practical skills are required and some pharmacological knowledge.. On closer analysis, this appeared closely related to the task being performed, for instance, pharmacological knowledge would be required to understand that antibiotic suspensions should be stored in the refrigerator. Activities carried out that appeared closest to the domain mean again required predominantly instrumental rather than expressive behaviour.

Many items involve communicating with others. In these, students perceived high involvement where the activity was mostly instrumental, for example: Receive

information about patient's medication from nursing colleagues (Mean 2.53). In activities close to the domain mean, communicating involved explanations to families and children. However, there was little need for autonomy or decision making since items could result from following the instructions of others. An example here includes: Explain to parents about medicine given to their child in hospital, (Mean 2.32). These thus could require mostly instrumental behaviours rather than expressive ones. However, some other examples, Act as a childs advocate (Mean 2.35), Report medicine error (Mean 2.32) may be performed at several different levels. These activities could be seen as purely instrumental, but in difficult cases, they might involve expressive behaviours as thoughts and feelings and attitudes are involved in determining an acceptable course of action. Involvement may thus be influenced by the experience of those undertaking the activity. Students with little practice experience may thus perceive high involvement without fully realising the implications of such a requirement to be involved. Activities with low mean scores within the domains again include those that require the student to make decisions in their care for example, Give medicine to a reluctant child (Mean 2.24).

Domain Three – Autonomous Specific Practice

Number of activity items 62; Cluster Mean Score 2.12; SD.649; SE.079; Range 1.00-3.00 95% CI for Mean; 1.966 to 2.285.

Typical Items

- Order medicines from pharmacy
- Take responsibility for medicines given
- Decide whether to give a medicine at the exact time prescribed
- Take responsibility for keys securing medicines cupboards
- Administer a medicine via a naso-gastric tube.

This domain included activities that required much increased pharmacological knowledge, compared to domains one and two, and some limited mathematical knowledge. Skills required are a combination of both basic nursing and more advanced skills although 59.67% of activities undertaken were rated as only requiring basic practical skill to achieve them (compared to only 29.03% requiring advanced practice skills). In this domain the respondents would have to use sophisticated instrumental behaviour, applying cognition as well as motor skills. These activities require initiative to be taken and the use of autonomy in practice in specifically applied situations. This domain has few outlyers, and a narrow 95% confidence interval to the mean, indicating commonality of the activities.

Domain Four - Decision Making/Teaching

Number of Activity Items 44. Cluster Mean Score 1.83; SD .642, SE, .079, Range 1.00-2.978; 95% CI for Mean 1.670 to 1.986

Typical Items

- Explain medicines administration procedures to students
- Use an infusion pump to administer medicines
- Check displacement values for reconstituting powdered medicines
- Recognise when a medicine is contra-indicated
- Help students assess children who need analgesia

This domain is characterised by the requirement for a change in the types of practices undertaken. There is an increase in practices requiring advanced skills and knowledge compared with those requiring more basic practice skills. Mathematical and pharmacological knowledge must now be selected abstractly and applied to perform activities. For instance, 'recognise when a medicine is contra-indicated. There is a need for accountability to be taken in this domain and this is again reflected in the increase in advanced practice skills identified. To achieve this level it is clear that both instrumental and expressive behaviours need to work together. An example could be: "Helping students to assess children who need analgesia" (Mean 1.85). Respondents would need to have knowledge about pain in children and be sure of their own attitudes towards pain assessment and the use of analgesia as well as skill in assessing the situation. Several activities involving teaching students and managing the care environment are also

represented. The low mean score indicates that most students would not participate in these activities without supervision.

Activity Domain Five – Adventuring

Number of Activity Items 9; Domain Mean Score 1.56; SD.464; SE .057; Range 1-2.75. 95% CI for Mean 1.44 to 1.674

Typical items

- Draw up resuscitation medicines for Drs to administer
- Act as shift co-ordinator, supervising other staff giving medicines
- Administer medicines via an established peripheral intravenous access
- Decide whether to repeat a medicine after a child vomits after taking it.
- Dispense medications from ward take home stock

This domain represented a small number of activities that may be considered 'Adventuring'. The activities in this domain required advanced practical skills and both pharmacological and mathematical knowledge. Most of them, although part of the registered nurse's role, would not usually be expected of a nurse who was newly registered, or of a student. Preparation would be provided during initial employment. An example of this includes the activity 'Administer medicine via an established peripheral venous access'. Nurses would not usually be permitted to participate in this activity until they were registered with the UKCC. They may also receive some specific preparation by their employer.

These activities in managing medicines require organisational skills as well as advanced practical skills. Such skills have been recognised by research on transition to registered nursing practice as not being achieved by qualification but within a post registration preceptorship period (Jowett, 1994; Gerrish, 2000).

In summary, five activity domains were identified, which are significantly different from one another. The activity groups identified in Chapter Five, from the Staff nurse interviews are not specifically grouped within any domain. This would indicate that there are no practice areas of medicine administration that are considered uniquely differently. The domains can however, be described according to some skills and knowledge required to undertake them.

8.4.3 Part Three – Comparison of Cluster Responses to Activity Domains.

It was identified that gaining information about differences between student cluster responses to the activity domains can offer information about learning needs. An examination of the way that respondent clusters perceived each of the activity domains was thus performed. IATS again allowed comparison between respondent clusters and item scores within each of the activity domains, which enabled the determination of characteristics of response clusters in relation to perceptions of their involvement in the individual activities. On this occasion, one way analysis of variance (ANOVA) was conducted to determine differences between cluster group means in their responses to activity domains The reasons for the use of these methods are discussed below.

A relevant discussion here relates to the use of ordinal data as interval. In order to reduce Type II error, one must use the most refined test possible on the data. However, this must take into account whether the data can be defined as meeting criteria for parametric testing or not. However, much social data (mine included) would not normally meet criteria for parametric testing, because the data interval cannot be demonstrated to be consistent. This is rather than it being demonstrated to be inconsistent. A similar premise has been proposed in relation to Likert scales, (Agresti, 1984). According to Youngman (1979a), this consistency cannot necessarily be demonstrated adequately within some interval data anyway. This debate has resulted in a split between conservative analysts who insist upon the use of ordinal data as discrete and more liberal analysts who observe that on occasions it may be treated as continuous (Youngman, 1979a; Knapp, 1990; 1999). After considering the evidence, I decided that the scale between 1 and 2 and between 2 and 3 could not be concluded as not having consistent intervals. Therefore, the use of the more refined parametric analysis of variance test could be supported for this type of data than the alternative non-parametric Kruskall Wallis Analysis of Variance by ranks,(Youngman, 1979a). Acceptance would ensure the minimizing of Type II error. However, consideration of Type I error, was then an issue.

Type I error occurs within making decisions about the meaning of a value obtained from a statistical test when the null hypothesis is rejected when it is true. This would mean that a relationship between cluster means would be identified as significant when it was not. Conversely, a Type II error occurs when the null hypothesis is accepted though it should have been rejected, and thus a significant

relationship between cluster group means would be missed (Burns and Grove, 1993). A difficulty of performing multiple single analysis of variance is similar to the problem associated with performing multiple independent t tests. The risk of Type I error inflates disproportionately and there is thus an increasing risk of identifying a significant relationship when none exists (Dempsey and Dempsey, 2000). A post-hoc application of the Scheffe test allowed specific determination of uniqueness of individual clusters from remaining ones without increasing the risk of Type I error significantly, as discussed by Burns and Grove (1993). (However, whilst the very conservativeness of the Scheffe test in restricting Type I error makes this test well accepted by researchers, there is inevitably an increased risk of Type II error, and this point should remain a consideration).

In this analysis, a one way analysis of variance determined differences between the response means identified by the cluster groups within each activity domain simultaneously. The Scheffe group atypicality test was then applied afterwards in order to compare individual cluster means with one another. This reduced the risk of Type I error or finding significant relationships that didn't exist. The establishment of the level of significance for the Scheffe test at a probability of <0.5 minimised the risk of Type II error, by allowing 95% confidence interval. These were reviewed for internal consistency using Cronbach's Alpha coefficient (shown in Table 16). It can be seen from the Cronbach's alpha coefficient scores that the membership of activities within identified groups is highly consistent (>.92), thus strengthening the diagnosis.

Initial inspection of the data demonstrated that the response clusters were ranked according to their responses within each of the domains (Table 18). (The previously assigned cluster numbers are indicated for ease of cross-reference). It is recognised that a median score may usually be the statistic of choice for ordinal data (Polgar and Thomas, 1991), however, the mean is more effective in this case because of the way the clusters have been constructed. Each respondent was included within the cluster by its similarity to the cluster mean. Any that are identified as significantly different would have been clustered separately.

Table 18 MEAN CLUSTER RESPONSES TO THE ACTIVITY ITEMS (Re-Ordered Lowest To Highest, According To Score In Each Domain).

ACTIVITY DOMAINS	(2)	(3)	(4)	(1)	(5)
1. ADVENTURING	1.15	1.13	1.44	1.67	2.16
2. DECISION MAKING TEACHING	1.17	1.18	1.53	2.09	2.76
3. AUTONOMOUS SPECIFIC PRACTICE	1.17	1.46	1.92	2.58	2.91
4. DOING COMMUNICATING	1.30	1.91	2.32	2.76	2.95
5. SIMPLE DOING	1.98	2.60	2.84	2.93	2.97

Table 18 and the line graph, (Figure 8), show that the sample ranged from a cluster whose mean response to all activity domains predominantly indicated inability to undertake any activities, through to a cluster that indicated that they would be able to undertake most activities unaided. It was thus possible to describe the case cluster groups according to their group mean involvement in each activity domain. It was interesting to note that the cluster groups could be ranked. This was because they responded fairly consistently in every domain. For example cluster five represented differences in their involvement in all activities. They perceived themselves to have more involvement in activities in the 'Adventuring domain'

but they also perceived more involvement than all other clusters within activities in 'Simple doing' domain. Those that demonstrated less involvement also did so in most domains.

For respondents in the two lowest scoring clusters, similarity of response only occurred in activity domains relating to 'Adventuring activities' and 'Decision-making teaching activities'. These respondents had lower scores relating to mean involvement, and similarities occurred in relation to activity domains that they perceived they would not be able to participate. Differences between respondents in the two lowest clusters are evident. The first cluster could be differentiated particularly by their low involvement in activities that required 'simple doing' and 'doing-communicating activities.' Upon closer examination of these differences, the analysis of variance and post-hoc scheffe test identified that each of the clusters were identified as being significantly different ($p=<0.05$) in relation to their profile within the five activity domains. In relation to activity domain two, clusters three and four showed no significant difference, whilst in activity domain one there was no significant difference between clusters two, three, and four ($p=<0.05$) (Table 18 indicates the mean cluster response scores in relation to each activity domain). Response clusters displaying higher perception of their confidence in involvement, could be differentiated by their responses to activity domains two, three, four and five but displayed similar perceptions of highly confident involvement in activity domain one.

The clusters can thus be described according to their biographic characteristics and their group mean perception of items within the activity domains, leading to the following descriptors:

Passive Observers (Original Cluster Two). The following features represent respondents:

- Completing pre-registration programme
- Have no previous nursing employment experience
- Have limited opportunities for direct experience of administering medicine to sick children.

These respondents demonstrate the lowest confidence in all areas and are significantly different from other groups because of their low involvement in simple doing and doing communicating activities.

Observer Helpers (Original Cluster Three).

The following features represent respondents:

- Completing pre-registration programme
- Have no previous nursing employment experience
- Have limited opportunities for direct experience of administering medicine to sick children.

This cluster have score means of less than 2 in all activity domains, indicating that they do not not feel able to be involved in most activities. Activities in which they did perceive involvement would not be carried out independently, thus indicating a passivity in their practice.

These respondents demonstrate the second lowest involvement in all activities. They show significantly more involvement in activities relating to simple doing activities and doing communicating activities than the passive observers (p=<0.05). They demonstrate significantly less involvement in activities related to doing/ communicating activities than those in the engaged helper group.

Engaged Helper (Original Cluster Four). The following features represent respondents:

- Completing pre-registration programme
- Have no previous nursing employment experience
- May or may not have had opportunities for direct experience of administering medicine to sick children.

This cluster showed greater involvement in all areas than the first two groups, and significant differences (p=<0.05) related to doing communicating activities, thus indicating a willingness to help. They perceive themselves as able to perform some simple doing activities independently as indicated by the cluster mean of 2.60, but their scores suggest that they could not be involved in many communicating /doing activities without supervision, as their mean score in communicating doing activities at 1.91. They demonstrate significantly less involvement in specific autonomous practice, decision making/teaching and adventuring activities than the cautious practitioners (p=<0.05).

Cautious Practitioners (Original Cluster One). The following features represent respondents:

- Completing either pre-registration or post-registration programme
- May or may not have previous nursing employment experience
- Most have had opportunity for direct experience of administering medicine to sick children

This group demonstrated significantly higher involvement in specific autonomous practice, decision-making/ teaching and adventuring activities than the cautious practitioners ($p=<0.05$) but were significantly less involved in each of these in relation to those in the independent practitioner cluster.

Independent Practitioner (Original Cluster Five). The following features represent respondents:

- May be completing either pre-registration or post-registration programme
- If completing pre-registration programme; are very close to completion or already registered
- May or may not have had previous nursing employment experience
- Have had opportunities for direct experience of administering medicines to sick children.

This cluster demonstrated highest involvement in all activity domains. They can be differentiated from the cautious practitioners by their increased

involvement in all activity domains except simple doing activities. Respondents would perform most activities unaided except for those in the adventuring domains. They would perform these with supervision.

From the descriptions of the clusters it can be seen that 'observer helpers' and 'engaged helpers' appear to similar in terms of biographic variables even though they have been identified as discretely different in the fusion diagram. However, the 'engaged helper' cluster contains students who are either nearing the end of the common foundation programme or are entering the child branch programme at the time of the survey. These respondents show significantly greater involvement in communicating/doing activities. These students will have had some opportunities for working with well children, and may have been able to observe administration of vaccinations by health visitors, and differ from Cluster Two because of this experience. It would appear possible to predict a typical pathway in relation to involvement in administering medicine. This may vary according to their experience, but it seems that any nursing related experience is influential.

'Cautious practitioners' and 'independent practitioners' are differentiated from lower scoring groups by their increased involvement in all activities. Cautious practitioners need greater supervision in activities involving decision making and teaching than independent practitioners.

In summary, students and newly registered nurses can be characterised in relation to their involvement in medicine administration. The sample responses identify five significantly different clusters. These clusters can be ranked according to

their perceptions of involvement and described by their members' biographic characteristics and responses to the activity domains. No cluster identified independent involvement in all domains. The response clusters can be described by their perceived involvement in each of the activity domains and by their biographic details and have been entitled Passive Observer, Observer Helper, Engaged Helper, Cautious Practitioner, Independent Practitioner.

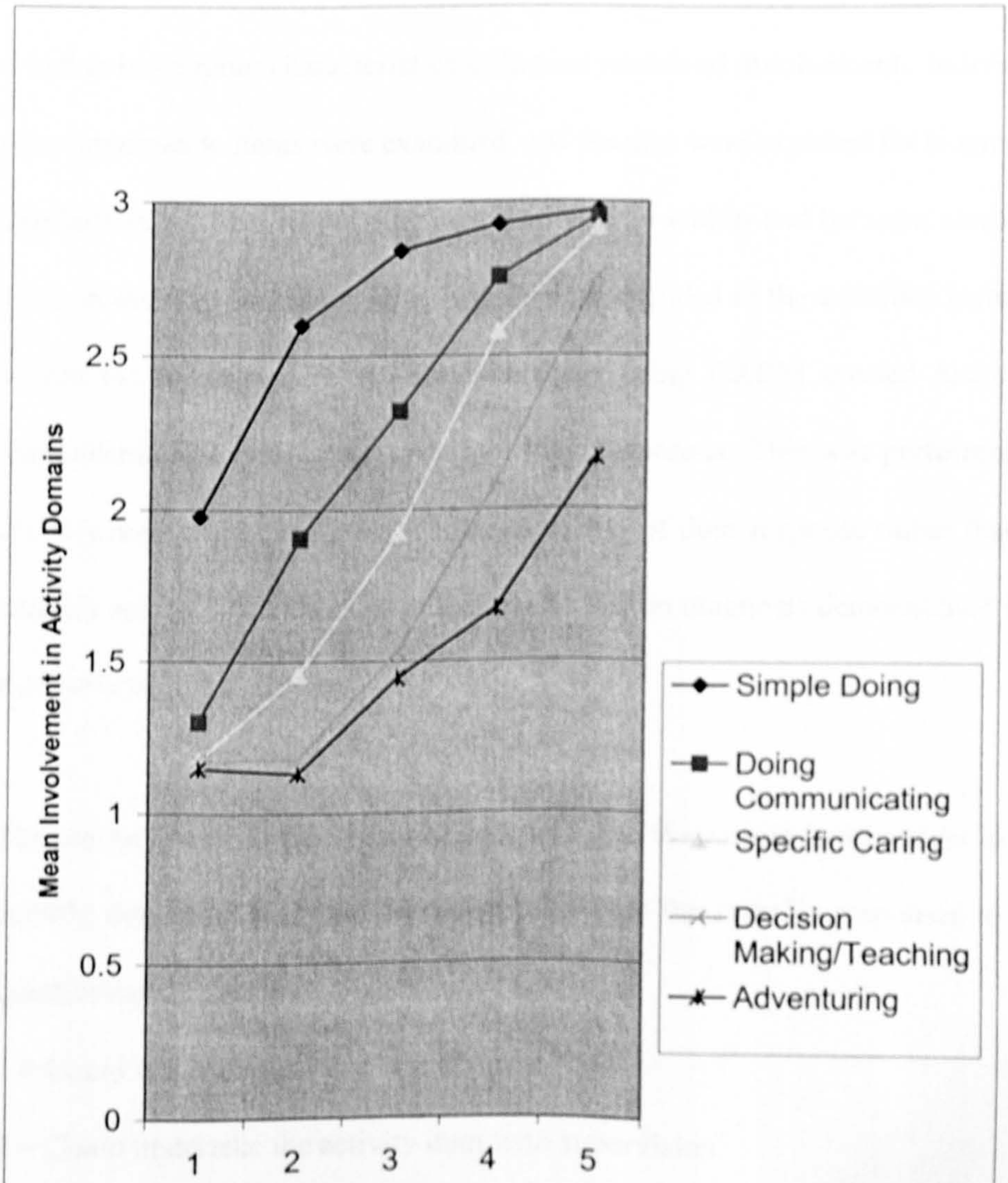
It was finally important to examine how all the clusters responded to the activity domains. This examination was based on the notion that everyone completing the questionnaire may perceive particular activities with lower or higher involvement. Synthesis of the activity analysis and the respondent analysis was achieved and is included in summary.

Figure 8 shows the involvement in activity domains by the response clusters. Differences between clusters can be observed, and each activity can be considered in relation to these differences. The activity domains decision making/ teaching and adventuring activities are perceived to have less involvement by all respondents, than for the other domains.

Most respondents do not perceive themselves able to undertake adventuring activities, and would not tackle activities requiring decision-making or teaching skills without supervision. However, it is notable that there is a difference between the most involved group and the rest at this stage. These respondents would tackle adventuring activities with supervision, and would become involved with decision making teaching activities unaided. The least involved students

were also differentiated from the remaining clusters, as they would not perform within any activity domain without supervision. Finally, the activity domain related to 'simple doing', elicited the most confident involvement by respondents of all clusters, whilst adventuring activities elicited the least confident involvement. Whilst this was indicated in the earlier work using IATS, the ranking is supported in relation to the cluster responses.

Figure 8 INVOLVEMENT IN ACTIVITY DOMAINS BY CLUSTER



8.4 Results

The results are presented sequentially in three parts relating to the research questions. In conclusion, the findings are drawn together in light of the research questions posed, and key issues identified for further discussion later in this work.

8.4.1 Part One - The Respondents

This part considered the respondents themselves and attempted to evaluate whether biographic characteristics influence perceived involvement. Individual case responses to items were examined, and the data were explored for biographic similarities of cases responding in a similar way within and between clusters. First, in order to determine how the sample responded to the activities included within the questionnaire, an initial analysis using CARM created fusion of respondents into clusters according to their responses. This was performed to classify respondents according to the similarity of their response rather than to identify scores. Once this was achieved, the fusion diagnosis demonstrated five distinctly different clusters..

The cluster groups can be described according to their mean involvement in the activity domains. It should be remembered that the samples responses to the questionnaire could be:-

1 = Could not undertake that activity item

2 = Could undertake the activity item with supervision

3 = Could undertake the activity item unaided

When examining whether the sample responded similarly in relation to their involvement in activities relating to medicine administration, it was found that the five respondent clusters were identified as significantly different. None demonstrated any "cross over" in confidence with any other cluster, but there were areas where differences between clusters widened to become significant at $p<0.05$ level. These significant differences in the cluster profiles determined their discrete nature. This indicates that respondents do not all perceive their involvement in the same way in relation to all activity domains, but then can be categorised according to the way that they perceive involvement.

8.5 Discussion

Evidence from this part of the work aimed;

> *To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.*

Factors affecting an individual's ability to perform effectively within a role, included understanding social norms or prescriptions for role behaviour, knowledge of expected behaviour and availability of role models. They also include the students individual self-concept, physical makeup and age, physical and emotional well being and performance in other roles (Goffman 1959, Roy and Andrews, 1991). With regard to medicine administration, features proposed within the literature in Chapter Two as being associated with gender, past experience,

previous qualification and exposure to practice. This research cannot be conclusive about whether gender is influential as the sample included too few men.

Previous qualifications were also not found to be significantly influential. This lack of significance attached to previous qualification supports the work of Hilton (1999) and Hutton (1998a), rather than Kapborg (1995) Both of the pieces that this work supports were researched within the UK, whilst the Kapborg (1995) piece was concluded in Sweden. This may suggest some cultural difference in the nature of the qualifications under consideration. All of these studies however, focused specifically upon qualifications related to mathematics, rather than considering the level of educational qualification achieved in any subject, something addressed by this work. For the UK, the evidence does suggest that achieving previous academic qualifications may currently make no difference to the way that medicine administration is performed or perceived to be performed (Hutton, 1998a; Hilton, 1999). This is important consideration for schools of nursing, when consideration minimum entry levels for recruitment into children's nursing.

Both past experience related to nursing and exposure to children's nursing practice within the diploma course were influential factors in this samples perception of their involvement in medicine administration ($p<0.01$). This finding is supportive of the view that socialisation within nursing is important (Eraut ,et al; 1995) It is has more recently been supported by the increased requirement of practice to be included within the common foundation programmes(CFP) as outlined by the reports Fitness For Practice (UKCC, 1999) and Making a Difference (DOH, 1999)

Post-registered nurses demonstrated increased involvement in activities, which suggests that their experiences outside of children nursing and the diploma course may play a part in their perceptions. Indirectly, this is encouraging as it strengthens the external validity of this work. Although medicine administration in children's nursing may be defined as a unique role, it shares many components with medicine administration in other branches of nursing as well as across specialities within children's nursing. This is an accepted consideration when examining how medicine administration is taught across the diploma in nursing course because the CFP includes core areas of subjects deemed applicable to all branches of nursing. However, this work suggests that students may not be completely cognisant of the role and may find the application of what they learn in CFP to the practice of administration of medicine to children difficult to achieve.

Students were found to respond significantly differently ($p<0.01$) between their CFP and their first hospital placement in branch. This further suggests that socialisation in the student's 'own' branch may be beneficial for students to understand their practice. Further examination of the activity domains indicates that this increase in confidence relates to their involvement in communicating and doing activities. This is an important finding for this work as it supports Eraut et al (1995) finding that early practice is useful in allowing learners to socialise to a wider role of nursing. In relation to medicine administration practice it also illustrates that this is related to students perceived ability to use communication as well as develop instrumental skills in practice.

This research must therefore support a recommendation to allow students access to practice earlier within their course in order to become more aware of the breadth and depth of their role in medicine administration and to develop their communicating and doing activities. This would also allow students time to assimilate their knowledge over a three year period rather than an eighteen month child branch programme. Students would have greater opportunity to understand expressive and cognitive behaviours associated with medicine administration practice.

Examination of the cluster responses in relation to the activity domains suggests that there are some activities all respondents found difficult. Activities that require decision making or teaching, and those described as adventuring are a particular consideration in this respect since no cluster identified completely independent involvement in these domains. As together they account for 53 out of 201 activities this finding is important in considering why newly registered nurses may not perform effectively in medicine administration practice. The clusters are also significantly differentiated by their responses to particular activity domains. This raises questions in relation to the learning experience of the sample, and these activities need to be particularly addressed when exploring the nature of the taught material included within preparation. The results show that the practical experiences of respondents' do significantly influence their perception of their involvement in medicine administration. A further consideration must relate to the potential impact of the taught component, on their responses. This is important for two reasons. First, there is a need to establish whether these students are missing aspects from their course of study that would influence

whether they could perform their registered role more effectively. Secondly it is important to understand whether these snapshot results can be replicated, which would strengthen their reliability. In chapter nine, the aim is to understand the nature of the relationship between the respondent perceptions of their involvement in medicine administration and their learning experience as taught within one pre-registration diploma in nursing course. This is illustrated in the third and fourth aims of this research.

9 Chapter Nine – An Evaluation of Student Preparation to Administer Medicine - Curriculum Analysis

The contribution of scientific knowledge to the quality of practice demonstrated by newly registered practitioners will depend on what knowledge is incorporated into the curriculum and the extent to which student's learn to use it in a reflective, critical and professional manner.
(Eraut et al.1995; p173)

9.1 Statement of the Problem

Up to now this research has identified that there appears to be a role in medicine administration that may be defined according to five activity domains. The way students responded to these varied according to their practice experience and their progress through a course of study. However, the impact of the taught component of their course is not yet understood, and it is proposed that this may be an influential variable in forming student's perceptions.

This chapter presents an evaluation that seeks to address the third and fourth research aims of this work. These are: -

To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one Diploma in Nursing Curriculum.

To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

Figure 9 FLOW CHART ILLUMINATING THIS STAGE OF THE RESEARCH

AIM ONE:
To identify activities which comprise the role of registered nurses in administering medicine to children.

RESEARCH DESIGN

- Semi Structured Interviews of 20 Qualified Nurses across a range of paediatric nursing settings
- Perform content analysis of transcripts to yield activity components of practice.
- Use content analysis and illustrative quotes to classify activities and describe the practice of medicine administration.
- Review of activity items for completeness and external validity using modified Q sort process and Inventory review

AIM TWO
To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.

RESEARCH DESIGN

- Develop activity inventory into a perception questionnaire
- Use questionnaire to determine student and newly qualified nurse's perceptions of their involvement in activities comprising qualified practice in medicine administration.
- Use Cluster analysis to group activities into domains according to response by all respondents.
- Describe activity domains using 'typical items' showing mean scores close to cluster mean, and analysis of all items in each domain compared to learning theory identified in literature review.
- Use Cluster analysis to elicit response groups showing significant differences in response to other groups ($p<0.05$)
- Use cross tabulation and chi square to determine biographic attributes of clusters.
- Use IATS to compare clusters group responses within each activity domain
- Test consistency of activity domains and clusters using a replication study
- Compare student and assessor perceptions of student involvement using paired study
- Illuminate responses in detail by generating case profiles related to each activity

AIM THREE
To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one diploma in nursing curriculum.

RESEARCH DESIGN

- Obtain session material from teachers responsible for teaching administration of medicines within one Diploma in Nursing Course.
- Map content of sessions according to Eraut et al's (1995) model of curriculum evaluation in order to review type of learning student may achieve.
- Compare session content with 11 broad classifications of practice in medicine administration practice

AIM FOUR
To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

RESEARCH DESIGN

- Compare findings from respondent clustering exercise with evidence from document mapping exercise

AIM FIVE
To propose a strategy for preparation that could enhance role function in administering medicine to children

- Use discussion to synthesise findings in the context of the existing theoretical framework to conclude enhanced understanding of the nature of the research problem and propose a future strategy for practice preparation

To achieve these aims, the curriculum delivered within the Diploma Programme at the study university required exploration. (A summary of this part of the research is highlighted in Figure 9). Taught curriculum material was compared with role activities in medicine administration determined by nurses in clinical practice. Further, the taught material was considered in relation to the way that students perceived their involvement in practice as identified in Chapter Eight.

It was important to identify whether preparation for the registered practice administering medicine to children was evident within the taught component of one Diploma Course and to understand more about the relationship between student perceptions of their involvement in medicine administration and their taught experience.

9.2 Methodology Issues

To understand more about how the preparation for medicine administration was delivered within the programme, the curriculum content required scrutiny. This was a difficult task to achieve. In nursing, the curriculum necessarily includes taught experiences but also includes opportunities afforded in practice placements.

As practice criteria have already been identified within Chapter Five, these will be considered within this part of the work. The provision for preparation will therefore be defined by the taught curriculum content that students receive. Further, Rogers (1986; p131) sees curriculum as being, "...Much wider than just a list of subjects to be studied; it is not just what you say but the way that you say it."

The considerations around devising this part of the evaluation were complex. It was necessary to evaluate individual taught sessions in order to identify how teachers interpreted the curriculum into facilitating learning within the classroom. Taught content could then be compared with the practice activities. To compare taught provision with practice expectation determined by identified activities, both content and of nature of learning had to be appraised. Finally, students perceived involvement with activities in practice must be compared with the programme of education they received, as identified in Chapters Seven and Eight.

9.2.1 The Overall Strategy

The additional data for this part of the work was the taught curriculum content undertaken by the students during their course. This was obtained by analysis of primary source documentation relating to teacher led sessions that contained material pertaining to medicine administration. The decision to adopt such a method was taken after the following consideration of alternatives.

It was recognised that the data required may be attained either by asking staff to describe in detail what they taught and when, or by requesting documentary evidence of their sessions for review. There may be benefits of asking staff for their perceptions of the contents of their sessions. Interviews would offer a richness of data, justifying the teachers' interpretation of the curriculum. Meaning of inclusions could also be clarified, thus increasing the validity of the data collected. However, interviews would rely on teachers remembering exactly what

they taught in some detail, or in bringing documentation such as teaching plan with them for discussion at the interview. Further, though the richness of data obtained would be interesting, it would be diversionary to this work. The intention was to compare the taught material and the student perception of their involvement in practice activities, rather than necessarily understanding the teachers' rationale for inclusion of subject matter. If the students do not identify such a rationale as part of the taught component of the session, then it would not be a comparable feature of their experience.

Use of a questionnaire also potentially demonstrated weaknesses. A questionnaire must take up a small amount of teachers' time in order to ensure a maximum response rate. This would allow for the most comprehensive mapping of medicine administration taught content across the Diploma in Nursing programme at the Study University. The simplest questionnaire would use closed questions, but these would only ascertain what might be assumed to be included in the sessions already, since such closed questions are largely be constructed to confirm knowledge already assumed by the researcher in devising the tool. An open-ended questionnaire may be feasible but this would rely on a greater amount of effort by the teachers to interpret what was required, and therefore may affect response rate.

It was concluded that the best means of obtaining relevant data would be by requesting session material from teachers. Use of this primary data "...are, intentionally or unintentionally, capable of transmitting a first hand account of an event...." (Cohen and Manion, 1994, p50). The benefits of the method were that the data would be a reliable resource, as it was information collated by the

teachers themselves for the purpose of facilitating a session. Data would also have content validity, as the information would be obtained from working documents such as handouts, view-foils and teaching plans. Weaknesses could include difficulties in interpretation of different teacher's styles, and in understanding notes meant for the teachers themselves. In practice, teachers may also omit parts of their planned sessions depending on time and interaction with individual groups. Contact with the teachers needed to be maintained in order to clarify ambiguities if required, and thus triangulate the documentary evidence using personal accounts.

9.2.2 Piloting and Preparation.

Hopkins (1993, p193), in considering evaluation for school development, highlighted the need for curriculum evaluation to be supportive of development and linked to classroom practice. He additionally pointed out that evaluation must be;

> *...sufficiently pragmatic to serve the decision making processes of evaluation, and as far as possible fitted into the day to day life of the school.*

A tool was needed that would enable collation and comparison of material from the session plans, and allow comparison with the role of the nurse in practice. To achieve this, existing models for curriculum evaluation in nursing were explored, and an outline plan was developed using an existing model for evaluating practice within curriculum (Eraut et al. 1995). This is discussed further in the measures section (9.3.1). A pilot was undertaken to determine the effectiveness of

the tool in evaluating curriculum materials and comparing these both to the nurse's role and to the perceptions of student nurses' involvement in practice.

An existing teaching session plan and materials that were not going to be used for the analysis of medicine administration in practice were requested from a colleague. A comparable skill based session of medicine administration was chosen from another pre-registration (enrolled nurse conversion) course that led to a qualification in children's nursing. The pilot indicated that document evaluation was possible though a lengthy process. It ultimately helped to refine a master review grid for data collection that could be held on the computer and from which comparisons could be made in relation to each session (See Appendix 6). It was also recognised during piloting that scrutiny of documentary evidence by one researcher who had a background interest in the subject matter would be weak and potentially biased through interpretation. Although the imposition of a review grid as described above served to facilitate objectivity, a further measure, using an outside scrutiniser was decided upon. This measure is recommended as a mean of increasing the reliability of interpretation of data collected by one researcher (Brink, 1991). This person could read and compare documentary evidence with the summary analysis for each session. The person selected needed to be someone who was not known to the School or the teachers, but did need to understand the process of validation and be able to appreciate practice related medicine administration within children's nursing. In the event, a fellow PhD student was approached, who was also a children's nurse and who was employed at another university as a lecturer.

9.3 Main Study

Access to the documentary evidence was gained through personal contact with tutors. To gain understanding of the curriculum where taught components related to the administration of medicine, I initially informally interviewed the three "subject group leaders". These teachers each had a remit for curriculum development in relation to specific groups of subjects, and thus had an overview.

Notes made during the three interviews facilitated personal contact with tutors who were involved in teaching medicine administration.

From the subject group leader interviews, it was evident that only a limited part of the curriculum specifically related to administering medicine. Many areas identified within the role of the nurse (identified in Chapter Five) were taught, but did not directly mention medicine administration, (eg communication skills, using the nursing process, admitting and discharging patients). Other sessions mentioned medicines but did not address the topic as their major focus (eg; alcohol and substances of abuse; strategies for pain management; numeracy for nurses). As these sessions required application of their content by students and the amount of relevant content varied, it was decided to collect data relating only to those that were specifically identified as relating to medicine administration by the subject group leaders. Analysis would then consider the extent to which these other parts of the role identified in the initial criteria in chapter five were addressed specifically in relation to medicines.

Once the subject group leaders had identified teachers, each one was approached by letter. Teachers were informed about the nature of study and asked if they

would be prepared to help. If they were not involved in teaching medicine administration, this method was used to trace those who were. Although ethical permission was not required from the School of Nursing to obtain this information, I was aware of the position of the teachers and myself as researcher (as work colleagues and peers). Teachers were advised that material they disclosed would remain confidential to the scrutiniser and myself. If the teachers consented to their teaching plans being included, then they forwarded material via the internal mail.

The strength of this sampling technique was that it was aiming for a complete population, and the methods used, namely purposive sampling using an existing network, though comparatively informal, could achieve this. The existence of cross-site groups for curriculum development enhanced parity of teaching across the sites, and made teachers easily accessible.

Issues relating to subjectivity were not relevant because the ultimate aim was to obtain as much material as possible from people who were involved in teaching students. The teachers themselves were not the focus of attention. However, they were the gatekeepers to the information that I required. This was the main weakness; because they could dictate what material I was given. As a teacher myself, I could have been perceived as policing what my colleagues were doing and potentially teachers could omit controversial material. I needed to be sensitive in my approach and clear about my objectives, in order to collect the material required.

A sample of ten teachers from the five centres of the study school was initially identified. Teaching sessions directly concerned with medicine administration were found within two specialist subject areas, (Biological Sciences and Nursing Theory and Practice). Following letters, seven teachers returned a total of fourteen teaching plans and materials. Four different sessions were identified in Common Foundation Programme and two were identified within the Child Branch Programme.

One teacher suggested via a colleague that they had no formal 'plan' to send but indicated what broad areas were taught in the session. Four of the five education sites were represented in some way, and although each teacher varied in the supplementary material submitted (eg handouts, notes etc), all submitted session outlines. In the site where there was no response, a telephone follow up was made, to try to gain participation, but although the teacher concerned was polite and seemed interested, no material was received. Students from this site however, attended university centrally for their branch theory, and since there was a mechanism of monthly cross-site group meetings in place to ensure parity across all sites in teaching, this was accepted.

Table 19 indicates the session plans received from teachers at each site. This includes all sessions taught, although branch material was taught to all students in the cohort in one site.

Although there were two sessions identified in the Child Branch these were presented in one six hour day and the teaching plans reflected a single session.

Between the cohorts involved in the study, different teachers had taught this day and material was collected from three teachers.

Table 19 SESSION PLANS RECEIVED

SESSION MATERIAL RECEIVED	SITE L	SITE M	SITE N	SITE O	SITE P
CFP MOD 4 (NTP) STORAGE OF MEDICINES (3HRS)	1	1		1	
CFP MODULE 13 (BIOSCI) PHARMACOLOGY (3HRS)		1	1		
CFP MODULE 20/21 (NTP) MEDICINES ADMINISTRATION (3HRS)	1	1		1	
CFP MODULE 20/21 (NTP) ADMINISTRATION OF INJECTIONS (3HRS)	1	1		1	
CHILD BRANCH MODULES 28/29 (FOUNDATIONS IN NURSING PRACTICE) (6HRS)	1		2		

The strength of this sample is in the response rate. Seven out of ten teachers returned materials. The data was well spread across most teaching sites and some teachers submitted more than one session. A weakness of the sample of information obtained related to the site where no teacher participated. For reasons of confidentiality, I did not feel it ethically appropriate to return to the subject group leaders to determine the amount of input from the teacher in relation to curriculum development, and so I felt that I could pursue this no further.

9.3.1 Method: Measures; Adapting a Tool for Documentary Analysis

A review grid for data analysis was adapted using an underpinning outline model constructed by Eraut et al (1995) in their study examining the contribution of behavioural and biological sciences in Nursing and Midwifery curriculum. Eraut

et al (1995) suggested that the purpose of the model was to provide a conceptual framework for analysing curriculum designs. An outline framework was devised that allowed me to cross-tabulate features from the session plans with the eleven aspects of the nurses' role identified within Chapter Five. The framework allowed me to ask also how the session might facilitate the student to do the following in relation to each practice aspect;

- *Carry out practice.*
- *Describe practice*
- *Understand practice*
- *Evaluate practice*
- *Explain use of theory*
- *Understand use of theory in practice*

(Eraut et al.1995; p110-112).

In developing the review grid, I explored other means of evaluating curriculum materials (Eraut et al.1975), and decided to use the model espoused by Eraut et al (1995). This model fitted well with the concept of achieving effective role function and was complementary to the work performed in previous chapters. From Chapter Five, the curriculum material could be further evaluated in relation to items from practice by including activity codes from the role inventory devised. Further, this model was designed specifically for the Diploma in Nursing Course, which increased its appropriateness and validity in relation to comprehensiveness of content, and to the constructs that it intended to evaluate when compared with other tools.

9.3.2 Data Collation and Analysis

In order to analyse data obtained, it was decided to collate single representative sessions rather than examine all of the replicated samples. These were divided across the areas represented, so that each centre was represented by at least one session. Where there was concern that an issue might have been missed this was then compared with the remaining sessions from that site. Within the child branch, all the teacher's plans were collated. This review thus represented the maximum taught input that students would be likely to receive.

For each session, the material submitted was read through twice. The main features of each session were identified and entered onto a review grid. Each feature was classified according to the eleven areas of practice identified in chapter five. The features were then reviewed according Eraut et al's (1995) model to determine components that facilitated students to carry out practice, to describe their practice, to understand practice, to evaluate practice to explain use of theory or to understand theory in practice. Finally, the session content was compared with the student style groups and activity domains identified in Chapter Eight. The raw data was also sent to a fellow researcher for analysis and the findings were compared.

9.4 Results

An initial overview of findings identified that five sessions were included from the three-year Diploma in Nursing Programme. Notes taken from the initial access interviews with Subjects Specialist Leaders serve to offer a contextual background for these sessions.

Placements for practice in the common foundation programme were identified for their consideration of the healthy individual. Child-care placements were usually private nurseries, learning disabilities were day centres, and mental health placements were in community homes. Adult placements consisted of either care home for those with physical disability or elderly care facilities.

<u>Session One Custody and Storage of Drugs (3 hours)</u>

This was included within Module Four, Foundation in the Theory and Practice of Nursing, (weeks 2 to 27 of the programme). The module also included issues related to safe practice, such as hand washing and infection control management. However, these addressed broad principles rather than being specifically applied to medicine administration.

During this time students were also undertaking Modules Two and Three, Foundations of Biological Sciences, which includes a mixture of theoretical and laboratory based study. There is a strong focus on number and its practical application within science. Students have a basic maths test, which addresses principles of mathematics including addition, subtraction, multiplication and division. Introduction to Standardised International Units and conversion of

decimals are also included. The pass rate for this test is 14 out of 20 and the students who are unsuccessful are required to request tutorial support. The specialist subject leader however, acknowledged that the requirement for students to seek further help was difficult to enforce. At the end of the module, students undertake an unseen examination that includes a component of mathematics. This may include interpretation of data, or an equation. However, failure to achieve the maths component may not necessarily mean failure to complete the examination.

Module Two and Three also include microbiology. Antibiotics are considered including their effects, and potential sensitivity and resistance.

<u>Session Two: Pharmacology (1 1/2hours)</u>

This was included within Module Thirteen, Applied Biological Sciences in Nursing, (weeks 29 – 43). Sessions relating to pain management were also included in this module, where use of analgesics and antidepressants were discussed. A further session addressed social use of drugs and alcohol. Work on fluid balance included the effects of diuretics, whilst work on nutrition addressed the use of dietary supplements and parenteral nutrition.

<u>Session Three: Administration of Medicines (3 hours)</u> and <u>Session Four: Administration of Injections (3hours)</u>

These were included in Module 20/21, Common Foundations in Nursing. (weeks 45-63). In some centres, one or two students may attend a first child related hospital placement in this teaching period. Students also attended Health Visitor placements during this time where injections could be observed (vaccination).

They may previously have attended short mental health placements where administration of injections took place.

Session Five: Administration of Medicines to Children (6 Hours)

This was included in Modules C26 and C27, Foundations of Nursing Practice (weeks 83–97). This module ran concurrently with Modules C24 and C25, which addressed childhood development, and C22 and C23, which looked at promoting optimum health and development of children. The students learned about immunology, and about the use of vaccinations. Although medicine administration was not explicitly addressed in these modules, relevant content may include communicating with children, and understanding children's needs. Calculation was also addressed in a session on infant nutrition.

During the remainder of the child branch programme, many sessions included in Modules C28 and C29, and in Modules C30 and C31 Emergency Critical Intensive Care of Children (weeks 98-112), related to the nursing management of children with specific health needs. These were broadly systems based, for example; the nursing management of children with altered respiratory function. Within these sessions altered physiology would be addressed, and also appropriate nursing care. They would usually incorporate discussion about relevant medicinal treatment. However, the sessions would focus on the options for care rather than the medicine, and thus would be unlikely to develop beyond naming medications

During the Child branch, students would attend a range of practice settings both in hospital and community practice. Medicine administration to children would be a feature of these placements.

Session material was compared with the aspects included in the eleven categories identified in Chapter Five. The level of facilitation according to the Eraut, et al (1995) model was also appraised, in order to determine how far the session material could facilitate the students' involvement in practice. Finally, each activity identified with the session material was compared with the position of the activity in the domains found in Chapter Eight. The domain numbers are included next to each activity in the Tables (1= Simple Doing; 2 = Doing Communicating; 3 = Specific Autonomous Practice; 4= Decision Making/Teaching; 5 = Adventuring). This was not an exact activity and there were some aspects defined that were not included within the inventory. These were not scored. Appendix 6 shows the outcome of these comparisons.

9.4.1 The Results - Emerging Observations.

Several observations emerged from the document analysis, and these are outlined below;

- When compared with the eleven categories of activities identified by registered nurses, the taught component appeared to omit some categories. These included 'Admission' and 'discharge' of patients, 'organisation and management' roles and 'working with students nurses'. 'Communication

with members of the multi-disciplinary team', 'working with children', and 'working with parents' had limited inclusion.

- Activities defined within teaching sessions are mostly found in activity domains associated with higher involvement.
- Few activities were identified as emanating from activity domains entitled 'decision making/teaching', and 'adventuring'.
- The description of the items included in teaching plan by the teachers were mostly interventions that subscribed to Eraut et al (1995) mediation chains of 'Describing practice' and 'Carrying out practice'.
- Teaching focuses heavily on legal and policy aspects of medicine administration, and on the rights of practice, these are repeated several times.
- Practice was incorporated in relation to administering medicines via different routes.
- Material included how to carry out subcutaneous and intra-muscular injections.
- The focus of materials was based on teaching students how to achieve safe practice.
- Barriers to safe practice such as incidence of error, issues related to non-compliance were not made explicit in the teaching materials assessed.

9.5 Discussion

Within this chapter, the third and fourth aims of the research were addressed. This conclusion considers the findings in relation to the aims.

> *To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one Diploma in Nursing Curriculum.*
>
> *To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.*

It is accepted that this was only material from one curriculum, but it was selected because of its proximity to the practice and the respondents under study. Applicability of these findings must therefore be considered at face value in relation to other similar programmes.

The taught course material supported existing literature in relation to medicine administration. The focus was upon the promotion of rights and safety in practice, consideration of legal and procedural issues, and the development of some techniques. The notion of routes of administration and the ways in which drugs may act were also addressed. The information given was relevant but in comparison with the role criteria, it appeared incomplete. In a curriculum that prides itself on evidence- based practice, the relationship between the existing evidence and the nature of the taught material was commendable. Aspects relating to doing and communicating and to simple doing activities and to specific practice were identified within the taught material.

The parts of practice preparation that appeared to be omitted were those that were more applied, in particular, decision-making, and teaching skills. These are activities that were identified as part of the role of the D/E grade staff nurse. However, without preparation, students have to discover that these issues exist, from a body of knowledge that largely does not recognise them as a pre-registration activity in administering medicine, or where it does, fails to address practically how the may be dealt with. Activities considered by students to be adventuring in nature such as expanded role issues are also omitted.

This problem is not a new one in relation to nursing generally. However, the literature relating the transition of student to staff nurse has cited areas of concern for newly registered nurses completing the Project 2000 Diploma in Nursing as decision making and teaching activities and some clinical skills (including medicine administration). This is more evident than for previous courses (Jowett, 1994; Luker et al. 1996; Gerrish, 2000).

On inspection of how teaching material was introduced to the students, two features were evident. First, the problems of medication error, and how to manage with children who refuse medication were not clearly identified. The principle of medicine administration identified that students should give medicines safely, and that mistakes should not be made. This was an area of concern. These issues may be addressed elsewhere in the curriculum and reliance placed upon the student applying this to practice. Practice appeared to be left to the student to determine within their placements and the idea that mistakes are an unfortunate but nevertheless identifiable part of nurse's working life seemed to be omitted.

Secondly, there was some repetition evident throughout the programme, and the scope of mediation identified according to Eraut et al's (1995) criteria appeared narrow. This is discussed further in the next section. Findings obtained from Chapters eight in relation to student's perceptions of work related activities were compared with aspects taught to them using Eraut et al's (1995) mediation chains, established for the evaluation of curriculum. Although entitled slightly differently, attributes required to achieve each of the activities have similarities. If one is mindful of the differences, this is a useful acknowledgement, since within this model, the activity clusters can be compared and contrasted, and indeed validated.

Table 20 COMPARISON OF AREAS OF CURRICULUM EVALUATION (ERAUT ET AL 1995), AND THE STUDENT'S PERCEPTIONS OF INVOLVEMENT IN ACTIVITY DOMAINS

AREAS OF CURRICULUM EVALUATION (ERAUT ET AL 1995)	ACTIVITY DOMAINS IDENTIFIED IN CHAPTER EIGHT OF THIS WORK
Carrying out practice	Simple doing activities
Describing Practice	Doing Communicating activities
Understand Practice	SpecificAutonomous Caring Activities
Evaluate practice, Understand Use of theory	Decision Making/Teaching activities
Understand Use of Theory in Practice	Adventuring Activities

The first major difference is that the mediation chains described by Eraut et al (1995) were not meant to be hierarchical by definition. Indeed their model demonstrated an interactive framework of mediations that includes practice at its centre. However, if they are compared with the activity domains identified in Chapter Eight, they become so in the study sample's perception (as shown in

Table 20). When one analyses session content, and adds the limitations of students experience in practice, then it appears that respondents are learning simply what they are taught, no more and no less. They are able to describe what they should do in relation to a limited part of a role but until they have the opportunities to learn in practice they are unable to perform much of the role with confidence. This is an important finding from a curriculum perspective, because it underlines the proposal that a range of mediation chains need to be integrated, when practice is taught (Eraut et al.1995). It further supports the need for students to derive understanding from direct application of both practice and theoretical course content.

In the next chapter, issues relating to the reliability of the work thus far will be addressed and case studies will be used to compare student and assessor perceptions of student involvement.

10 Chapter Ten – Validating The Earlier Work - What Is The Relationship Between Student's Perceived Involvement In Their Practice And Their Function Within A Role As Assessed By Staff Assessors?

10.1 The Statement of the Problem

In Chapter Eight, findings demonstrated that students nearing completion of their course reported high involvement in most areas of medicine administration practice, whilst those in the early part of the course were significantly less involved. Respondents were not as confident in activities related to decision-making and teaching and those requiring advanced practical and theoretical education outside of the current pre-registration curriculum.

Closer analysis demonstrated that involvement developed at different rates. Activities requiring application of theoretical knowledge in practice developed as students drew near to completing their studies. Indeed, involvement in activities requiring the use of mathematical concepts appeared to occur later than the theoretical intervention offered (mostly in the CFP). This is consistent with the findings of other researchers reviewing the relationship between theory and practice knowledge in nursing (Eraut et al.1995). Finally in some activities all respondents reported a lower involvement.

In Chapter Nine, it was found that taught material offered to students may be limited, with the focus on describing the preparation giving and recording of

medicine and on legal responsibilities and students personal responsibilities. Decision-making and teaching, and communication relating to the administration of medicine, and indeed in relation to error management were not included. These areas were found in Chapter Eight to be significantly associated with differences between sample clusters. However, findings in Chapter Eight only represented a snapshot of student perceptions at one point in their course, and this has limitations. It is possible to make a statistically calculated predictions using 95% CI to the mean based on the sample under study, (Rivers, 1994). However, it remains difficult to know whether the activities would be reliably grouped into the domains on another occasion, or how the cluster membership described may relate to another population. Further, whilst it is reassuring to observe high involvement in those nearing qualification and those who have registered, it is also important to validate student reports with their actual practice, since student perception of their ability has been overestimated in some cases (Daines, 1977; 1985). Such validation may also have benefit in the development of assessment for theoretical and practical knowledge, in preparation for a new curriculum. From a pragmatic viewpoint, when providing children's nurses who must be prepared for a registered role in medicine administration, the development of effective assessment strategies is vital to ensure competent, quality practice.

The purpose of this final part is therefore to seek to appraise the consistency of the activity domains previously identified. This can be achieved by comparing results of a repeated data collection with those in Chapter Eight. A further purpose is to identify whether student perceptions of their involvement in medicine administration have parity with observed competence in practice. A summary of this part of the research design is indicated in Figure 10.

Figure 10 A FLOW CHART ILLUMINATING THE RESEARCH DESIGN

AIM ONE:
To identify activities which comprise the role of registered nurses in administering medicine to children.

RESEARCH DESIGN

- Semi Structured Interviews of 20 Qualified Nurses across a range of paediatric nursing settings
- Perform content analysis of transcripts to yield activity components of practice.
- Use content analysis to classify activities and describe the practice of medicine administration.
- Review of activity items for completeness and external validity using modified Q sort process and Inventory review

AIM TWO
To evaluate student perceptions of their involvement in activities comprising the role of a registered nurse in administering medicine to children.

RESEARCH DESIGN

- Develop activity inventory into a perception questionnaire
- Use questionnaire to determine student and newly qualified nurse's perceptions of their involvement in activities comprising qualified practice in medicine administration.
- Use Cluster analysis to group activities into domains according to response by all respondents.
- Describe activity domains using 'typical items' showing mean scores close to cluster mean, and analysis of all items in each domain compared to learning theory identified in literature review.
- Use Cluster analysis to elicit response groups showing significant differences in response to other groups ($p<0.05$)
- Use cross tabulation and chi square to determine biographic attributes of clusters.
- Use IATS to compare clusters group responses within each activity domain
- Test consistency of activity domains and clusters using a replication study
- Compare student and assessor perceptions of student involvement using paired study
- Illuminate responses in detail by generating case profiles related to each activity

AIM THREE
To compare activities comprising the role of registered nurses in administering medicine to children, with current provision for preparation in one diploma in nursing curriculum.

RESEARCH DESIGN

- Obtain session material from teachers responsible for teaching administration of medicines within one Diploma in Nursing Course.
- Map content of sessions according to Eraut et al's (1995) model of curriculum evaluation in order to review type of learning student may achieve.
- Compare session content with 11 broad classifications of practice in medicine administration practice

AIM FOUR
To compare student perceptions of their involvement activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered within one Diploma in Nursing Curriculum.

RESEARCH DESIGN

- Compare findings from respondent clustering exercise with evidence from document mapping exercise

AIM FIVE
To propose a strategy for preparation that could enhance role function in administering medicine to children

- Use discussion to synthesise findings in the context of the existing theoretical framework to conclude enhanced understanding of the nature of the research problem and propose a future strategy for practice preparation

10.2 Methodology Issues

A small-scale study was designed to appraise student involvement in relation to assessed competence in practice and to replicate previous work. It was decided to concentrate on the student sample on this occasion and not repeat the questionnaire with newly registered nurses. This was because the respondents did not identify themselves significantly differently from the senior students and so further comparison of this cluster would still be possible without them. It was also deemed ethically insensitive to expect newly registered nurses to be assessed by their peers, when the findings from such exploration would have limited application within a course which they were no longer taking part.

A non-experimental descriptive longitudinal research design was used (Burns and Grove, 1993) involving a small number of child branch students (30) over a six-month period. During this time the student sample were asked on two occasions to self assess perceptions of their confidence in specific skills related to medicines administration. The measurement tool that was devised in the earlier part of this research was used.

Using a range of students across the child branch cohorts and sampling at the beginning and the end of the study period aimed to allow the following;

- Exploration of student perceptions at throughout the child branch programme.
- An opportunity to observe cohort development between assessments.

The student sample was randomly assigned to a study group or a control group. Practice assessors observed the study sample and reported their perception of the student's competence in relation to each activity. The control group simply assessed their own involvement on two occasions. The presence of the control group allowed consideration of potential intervention bias resulting from the study design, where students being assessed may respond differently from those who were not.

Data was compared between student and assessors using a further cluster analysis. Pairings were examined for similarity of membership within cluster groups and for differences in characteristics related to group membership. Further, features of student group response between assessments, and between the findings of the earlier study and this second part were compared. (This could serve to inform, by validating or rejecting previous findings).

10.2.1 Piloting Access and Preparation

Most of the checklist questionnaire developed in Chapters Six and Seven remained the same. However, biographic information to be gained from the registered nurses was different and so this section required review. For ease of use and recall, questionnaire booklets were again colour coded.

In terms of access, information for assessors had to be explicit and their permission requested for inclusion in the study. Although there was no need to apply to the health trust's ethical committee's for consent in order to send

questionnaires to registered nurses, the RCN (1993) guidelines for ethical conduct were adhered as a principle of ensuring quality practice. For the student nurses, protected by the School of nursing ethics committee, chair's action was agreed since the main proposal for the work had previously been agreed and no major changes to the first study design were included.

Students were accessed from cohorts who were attending the child branch and who remained on the 1992 variation of the 1990 validated curriculum. This led to a sample frame of 53 students from two cohorts of three-year courses and two shortened (thirteen month) courses. 38 students consented for inclusion within the study.

10.2.2 Preparation of the Assessors and Students.

I invited the students to meet me while they were in their cohort groups and explained the intentions of the study. Students attending the three-year course had already completed the questionnaire in the first part of this work so this was an opportunity to discuss issues that had arisen. For those attending shortened branch programmes, the meeting served as preparation. Some issues did arise and I was able to provide reassurance and information. Consenting students were randomly assigned to either a control group or to the intervention group using a sealed envelope technique. Within the study group, assessors to make the pairs were recruited via the students.

10.3 Data Collection.

Data collection took place twice over a six-month period, on dates coinciding with the previous student samples position in the course when the first stage of the work took place. This increased reliability of comparison between the two parts, for example, the first part of this research took a single sample of students from across all cohorts (See Chapter Seven). Students involved were three months, nine months, fifteen months, twenty-one months, twenty-seven months, and thirty-three months through their Diploma in Nursing course. As shown previously, differences through the course, featured as a finding in the first part of this work. In order to increase reliability of comparison, data was collected at two similar stages through the programmes. This also allowed students attending the shortened courses to respond before they had completed their course, and to complete questionnaires at the same time in the course as their predecessors had done. These students could also then be compared.

As responses were anonymous, and in the case of the paired assessments, the partnerships were different, the double assessment gave potential for 38 paired cases and 38 control cases to be observed as single entities within a cohort. It was also intended to attempt to compare individual student responses between the two stages. The assessment had to be carried out maintaining the assurance of anonymity. It was essential to reassure respondents that this work could not influence assessed performance on the Diploma course. This was important, since although I had not taught the student sample, I was known as a teacher within the School of Nursing. Given my position, I could not ethically allow this research to be simply confidential. I was also aware that I would be placed in a difficult

position if I knew that I could identify a student who was failing to achieve, because this work was assured to be outside of the ongoing assessment process. The ethics committee in the original proposal had already identified this issue and I had given assurances that anonymity would be maintained.

10.3.1 Assignment of Study and Control Groups using a Random Envelope Technique

Students made their initial random selection of envelopes, using the design discussed by Polit and Hungler (1989). This included pulling names from a hat to achieve randomness. It was performed at a meeting inviting all students in the cohort to participate, so the number of envelopes included for selection was sufficient for all students. Students who wished to participate were invited to choose an envelope at random. Reflecting over this now, it would have been better to have gained consent from the students before setting up the random envelope technique because since not every student did consent there were more envelopes than students. This left the eventual random assignment to the samples unequally balanced. Difference in sample size thus inevitably weakened the power of the sample (Burns and Grove, 1993).

Each available envelope contained either one or two further sealed envelopes, (depending on whether they were in the control group or the paired group). The students wrote their names on the front of these without opening them. The sealed envelope contained a randomly assigned identifying code, to be known only to the respondent. For those who received two envelopes, one was for the assessor and

had a paired code. The assessor code contained the same number as the student but a different initial letter indicating their position as assessor. After the random assignment had taken place, the envelopes were collected and sent to respondents with the questionnaires.

When completing the questionnaire, the respondent was required to include their identifying codes in the box at the beginning of their questionnaire. They were then asked to put their identifying number in to a second enclosed envelope with their own name on and seal it before returning this separately in a prepaid envelope. It was intended that this would maintain anonymity but the number could be re-used for the second assessment after six months, and results could be compared.

Students in the control group received questionnaires by hand with reply paid envelopes for return on two occasions as planned. Students participating in the paired study were telephoned at work and an appointment was made for me to meet both student and assessor together. At these meetings I explained the nature of the study to the assessor and invited their participation. The aim was for students and assessors to complete the questionnaires at the same time (but separately) and to return the questionnaire and the sealed envelope containing the identifying code in the enclosed reply paid envelopes. They were advised that they should not discuss their responses together before or during this procedure, but that they may feel that they mutually wished to do so once the questionnaires had been posted. This was acceptable and may indeed be helpful to both student and assessor. They were advised that questionnaires were paired by number for

the benefit of analysis but were randomly assigned and remained anonymous. Instructions were also given in written form. A two-week period was identified for the return of the questionnaires, and then a reminder and repeat package was sent out to the respondents whose student envelopes had not been returned.

The greatest limitation inherent in this procedure was a reliance upon good will and understanding of respondents. This related to the return of the questionnaires, and of the identifying code numbers. Many respondents appeared happy with what was required, but in spite of my explanation there was ultimately suspicion about the coding process. In some cases envelopes were returned without names on the front, or failed to reappear. Numbers were not included on questionnaires or were crossed out.

It may have been better to have developed four questionnaire packs for each participant in the control and eight for the study groups at the beginning of the study and then shuffled each group of packs once the numbers had been sealed. This would have given me the responsibility for the coding process and still maintained anonymity, but would not have avoided those determined to cross out codes. It would also have been an expensive option since it assumes that every respondent would require two questionnaires on both occasions.

It was not possible to compare individual students at the beginning and end of the six months as planned, as new codes had to be sent out for those who had not returned their envelopes.

10.3.2 The Sample

17 students were randomly assigned to the study group, and 21 students to the control group from two cohorts. 76 responses were obtained during the study period out of a possible 104 yielding a response rate of 74 %. Not all responses were useable, in two cases, no code was included on the questionnaire and so it was not possible to determine whether the response came from the control or the study group. In one case the complete pair did not return the questionnaire and thus no comparison was possible. The student's single figures were included in the data set because it would be possible to make use of them in comparing between time series measures. Tables 21 and 22 illustrate the nature of the 73 useful responses obtained.

Table 21 RESPONSES FROM COHORT ONE

COHORT 1	STUDY GROUP STUDENTS	STUDY GROUP ASSESSORS	NUMBER OF MATCHED PAIRS	CONTROL GROUP
21 MONTHS INTO COURSE	N=8	N=6	N=6	N= 8
21 MONTHS (SHORTENED)	N=1	N=1	N=1	N= 2
27 MONTHS INTO COURSE	N=5	N=6	N=5	N= 7
27 MONTHS (SHORTENED)	N=0	N=0	N=0	N=2
TOTAL NO	N=14	N=13	N=12	N=19

Table 22 RESPONSES FROM COHORT TWO

COHORT 2	STUDY GROUP STUDENTS	STUDY GROUP ASSESSORS	NUMBER OF MATCHED PAIRS	CONTROL GROUP
27 MONTHS INTO COURSE	N=5	N=5	N=5	N=5
27 MONTHS (SHORTENED)	N=0	N=0	N=0	N=1
33 MONTHS INTO COURSE	N=4	N=5	N=3	N=4
SHORTENED COMPLETED.	N=0	N=0	N=0	N=0
TOTAL NO RESPONSES	N=9	N=10	N=8	N=10

52 student responses were received yielding a response rate of 68.4%. This was acceptable for an anonymously returned questionnaire, but disappointing because the students had given consent to participate. Biographic information obtained at this stage was used to offer an illustration of main characteristics of cluster membership, and to determine homogeneity of the control and study groups. This would be in relation to support in practice placements, and to features that were identified as significant in relation to student confidence in the previous work. This included the student's past employment experience, their current position in the course of study and type of course (pre or post registration). The students were not asked about gender or academic experience, since analysis within of these features within the main study could offer no comparison. However, a further more specific question related to the possession of mathematics at or above GCSE or equivalent was included. This was in direct response to a request by the funding university. It was accepted that this would only offer raw data for appraisal by the university.

Tables 21 and 22 show that there were a greater number of respondents from Cohort One in both study periods. There was homogeneity between the study group and the control group. The highest percentage of students had worked more than four times with their assessors during their practice placements, and the study and control groups appeared to have similar experiences.

In relation to the assessors, 34 nurses were asked to assess 17 students, each on one occasion. Nurses were chosen by their position as the student's practical assessor in clinical placement at the time of the assessment. As the students were continuing to receive practice experience in the Health Trusts identified in the main part of this work, the nurses' sample was drawn from these Trust areas. Students were attending a range of different placements according to their position on the course and the nurses were thus from a range of practice specialities within children's nursing. In chapters five and six of this work, however, the role of the nurse in administering medicine to children was identified as being similar across these specialities. The nurse sample was purposive in nature but this was considered appropriate for the following reasons;

- The student already knew the nurse who was assessing them in practice and had built up a relationship with them.
- The nurse and student were most likely to have worked together and so the nurse would be in the best position to make an assessment of the student's current practices.
- The nurses were required by the university to have completed an approved course of instruction related to the assessment of students in clinical

practice in order to be able to assess the students required practice outcomes.

Assessor preparation ensured a minimum agreed standard for respondents undertaking assessment of students. This was important in ensuring some degree of inter-rater reliability between assessors and thus counterbalancing a weakness in this sampling method, that the same nurse could not assess the same student on the two separate occasions. However, whilst this measure attempted to ensure parity of assessment across the sample group, it was considered insufficiently reliable to directly compare single assessments on individual students across the two time periods. Although it may be possible to determine individual students personal progress it was decided to treat each paired observation as a separate case, rather than attempt to make comparison between nurse assessments.

Twenty three assessor responses were received, (response rate 67.6%). Of these, 20 were used in the cluster analysis. Three had to be rejected, one because the paired student failed to respond, one because the questionnaire was not coded, and one because the respondent had not completed the assessor's instruction days. A further assessor was subsequently removed because they clustered significantly differently from any other respondent. Further examination indicated that the questionnaire was only partially completed, leaving many responses with no data. When considering issues in relation to sample limitations, to have a small population is an issue in relation the strength of external validity. However, this is a further component of an initial work that used a greater sample with more direct capacity for comparison, and it was not intended that this part of the work

should stand-alone. It should serve to inform and support future discussion related to the first part of the work, regarding the best way to assess practice and theory related preparing students for their future role in the administration of medicine to children. With the small numbers identified in this part of the work, these findings must be considered to be practically illuminating, gaining significance from their application rather than through statistical significance. Therefore although inferential analysis is included for assessing significance of items within the checklist and cluster membership, comparison between student and assessor responses and study and control group responses was attained descriptively.

10.3.3 Measures

The questionnaire was re-used to allow students to self-assess their involvement within the role of a nurse in administering medicine to children. As shown in Chapter Seven, the measure had already been used with 56 students and newly registered staff nurses. It had already been subject to post-hoc reliability testing for consistency and stability of responses made to each item. The further use of this measure allowed comparison between the earlier part of the research and this later part.

The questionnaire was also re-used with registered nurses, but on this occasion different instructions were given. The nurses were now required to assess their paired student's competence in involvement, related to each aspect. They were not expected to comment about their own capacity to achieve to components of the nurse's role in administering medicine and there was no intention to compare their

responses with the newly registered nurses who responded previously. Data was logged into the computer, with each questionnaire comprising a data set including 213 numbers. The details of the data logging are replicated from Chapter Seven, and considerations relating to the construction and handling of the data sets may be found therein.

10.3.4 Reliability, Validity and Limitations

In terms of internal validity, the research measure was designed from a practice base using interview data from practitioners who were working within a role that included practices associated with medicine administration. This data formed the basis of the activities included within the questionnaire, and thus offered content validity.

An expert panel further evaluated the activities using a modified Q sort methodology in order to enhance content validity. Subsequent piloting and then use of the tool in the main study with post-hoc reliability testing indicated that the measure demonstrated internal consistency. On this occasion, the stability of the measure was evaluated in comparing responses from the current work with the previous responses. The robustness of this tool was identified through the comparative illustration of activity items to cluster groups between the two data sets.

Issues related to inter-rater reliability have already been identified in relation to the nurses acting as assessors. Measures have been taken into consideration with

regard to how both formal (through an identified assessor programme) and informal (through communication between researchers and respondents) assessor preparation may be used to ensure parity in response. Limitations with the use of the measure were identified in chapter seven that related to difficulty in validating student perceptions of their involvement in an activity compared to how they actually practice. This part of the study was particularly designed in an attempt to address this weakness and determine validity of the previous findings. The measure would therefore also be evaluated. Another weakness initially identified concerned the forced choice nature of the checklist responses leading to some respondents placing two numbers in one box. On this occasion, more specific guidance and explanation was offered to respondents, and these difficulties were not repeated.

Finally, the quantitative approach of the measure meant it could only describe current perceptions of a group of individuals rather than evaluating why any given perception may occur. This is appropriate the requirements of this research and therefore cannot be considered a weakness. However, it is a limitation that is related to the philosophical nature of the work, and does affect the potential external validity of the measure and nature of information that can be attained.

11 Chapter Eleven - Questionnaire Results and Analysis of Findings

11.1 Analysis and the research questions.

This analysis aims to examine student's perceptions of their ability in participating in activities related to medicine administration, and compare this with the responses of other students at the same position in their education programme. Also, in a small number of cases, to compare student's perception of their ability with the observations of a nurse allocated as their assessor within the practice placement. The purpose is to identify evidence that may further inform previous findings of student role involvement in medicine administration in relation to;

- The presence of increased confidence throughout the Diploma Course;
- Observed development of theoretical application of skills (including number) later in the course, compared with the offered theoretical components.
- Testing the reliability of activity domains and learning clusters identified in Chapter Eight.

It is also intended to illuminate student perception of their ability in medicine administration compared with observed competence in involvement in practice.

11.2 Data Logging and Analysis

Each set of data was arranged into a computer data based as described in Section 8.3 of this work, and the same considerations were addressed. The biographic information obtained was slightly different on this occasion, but the number of variables remained the same.

Analysis of the questionnaires was again achieved using a multivariate analysis that grouped respondents according to the way they responded and examined the whole group responses to activities. The analysis strategy identified within Section 8.2 was adopted. There are however, some notable differences. Multivariate methods of data analysis were initially used to examine activity clusters. The computer programme CARM was used to perform centroid relocation analysis on the responses of all the students in relation to the activity groups. As before, response means for the activity domains were examined for differences between groups using the post-hoc Scheffe Test (Youngman, 1976). On this occasion however, the nature of activities within the new clusters were then assessed descriptively by comparing them with domains achieving a similar mean student confidence from the original study investigation. This analysis of activity domains allowed consideration of the stability of their composition over time. It also allowed comparison of student responses with biographic variables previously identified as significant.

In the initial analysis, comparison of biographic variables was achieved through the use of computer analysis. However, within this sample it is more difficult. Numbers are small and some students have responded on two occasions within the

longitudinal part. This analysis was therefore performed manually and the raw data is presented descriptively. No tests of significance have been performed. In order to compare student and assessor responses, the data matrix was transposed and a second cluster analysis was performed. This established how respondents were clustered in relation to their responses to activity items. The study and control groups were compared to see whether there was any difference between the perceptions of students who had been observed and those who were not.

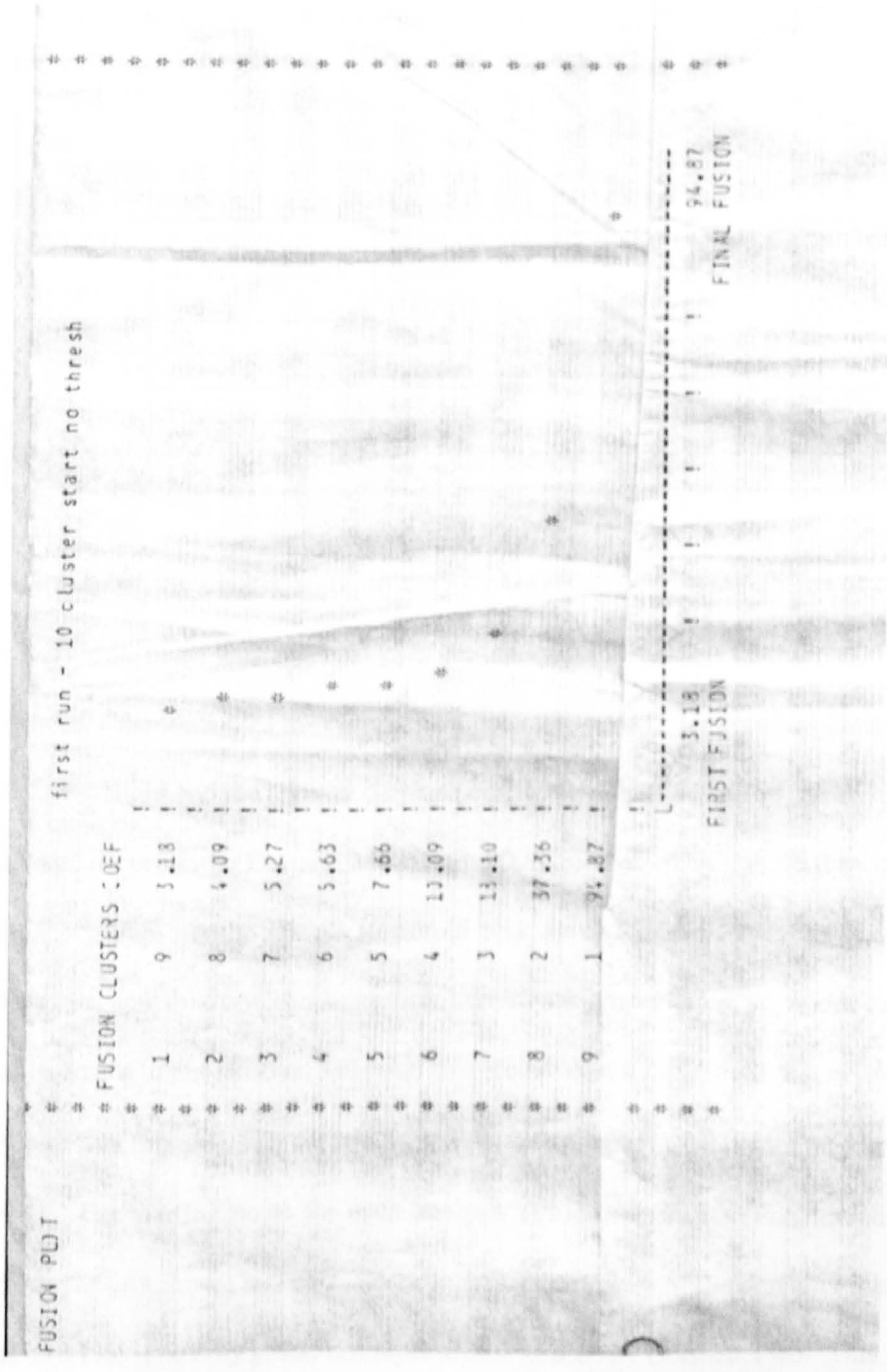
Finally, individual pairings of student and assessor responses were examined in depth in five cases. In these, percentage involvement in each activity domain by each partner was identified and compared. This allowed detailed descriptions of differences and similarities in perceived practice, even if the student and assessor responded similarly enough to be classified into the same cluster.

11.3 Results

The results present a comparison of 73 responses from students and nurses assessing student involvement, to the 201 activity items included in the survey questionnaire. The results are presented sequentially and linked by narrative related to the research aims, as in Chapter Eight. In order to determine whether there is stability of the activity domains over time, this part has analysed activity domains identified by all respondents. It has compared the original domains with the ones identified by this second data collection. Data was analysed using cluster analysis by relocation method. The computer programme CARM enabled the creation of fusion of activity items into clusters according to the way that the

sample had responded to them. Once this was achieved, the successive fusions were analysed by examination of the Fusion Plot (Figure 11).

Figure 11 FUSION PLOT ILLUSTRATING DIAGNOSIS OF ACTIVITY CLUSTERS



As shown, the fusion diagnosis showed five distinct groups of activities. (Justification for how diagnosis was achieved can be found in Chapter Seven). The five activity clusters were initially ranked according to their cluster mean score in order to offer some order. Table 23 shows the mean scores for the activity domain. Cronbach's alpha scores are also included. Once again, the internal consistency of the activity clusters was found to be high.

Table 23 MEAN SCORES FOR ACTIVITY DOMAINS

ACTIVITY	NUMBER OF ACTIVITIES (N)	DOMAIN MEAN SCORE (DMS)	DMS / N	CRONBACH'S ALPHA CO-EFFICIENT
1 (1)	30	83.40	2.77	0.92
2 (4)	44	110.64	2.51	0.97
3 (2)	65	147.41	2.27	0.98
4 (3)	49	94.72	1.93	0.98
5 (5)	13	20.29	1.56	0.93

Stability of the cluster solution may be considered if, under different starting conditions, more than 50% of cases are classified similarly (Youngman, 1979b). Table 24 demonstrates the comparison between the activity domains clustered in Chapter Eight and the activity domains clustered in this part of the research, when ranked according to Domain Mean Score (DMS) divided by the number of items in the group. Although no threshold was applied between the original data analysis and this one, both starting conditions began from an initial random assignment to ten clusters, followed by successive relocation and fusion until one group was formed. The second sample was also constituted differently from the first. The starting point for each analysis could therefore be considered to be different .As shown in Table 24, the overall consistency of the domains was good at 65.17%. The only group not replicated was activity Domain Two. This group

was fragmented over groups one and three, although domain two did still contain the most items from the old cluster, and was close (at 48.57%) to being acceptable.

When considering why differences may have occurred, one must not forget that the sample was different on this occasion, since no students in the Common Foundation Programme participated, and the registered nurses were ranking student ability rather than their own. The slight overall increase in mean scores may reflect such differences, as would an increase in involvement in items requiring lower order skills and knowledge (as is notable in Domain One, where 15 items were identified from the old Domain Two).

Table 24 COMPARISON OF OLD AND NEW ACTIVITY DOMAINS (Ranked According To Mean Scores).

	NEW CLUSTERS						
OLD CLUSTERS	1 (2.77)	2 (2.51)	3 (2.27)	4 (1.93)	5 (1.56)	NUMBER OF ITEMS	% CONSISTENCY
1 (2.75)	15	15	0	0	0	30	50.00%
2 (2.38)	1	34	9	0	0	44	77.27%
3 (2.13)	0	22	40	3	0	65	61.54%
4 (1.83)	0	0	12	35	2	49	71.43%
5 (1.56)	0	0	0	6	7	13	53.85%
NUMBER OF ITEMS	16	70	62	44	9	TOTAL 201	TOTAL CONSISTENCY 65.17%
% CONSISTENCY	93.75 %	48.57%	64.51 %	79.54 %	77.78 %		

11.3.1 Describing the Activity Domains (Refining a description)

The domains are highly stable and thus the initial descriptions from Chapter Eight remain adequate. However, further analysis of the nature of the groups in relation to their learning and skills needs was useful in determining the practical

significance of changes identified. For example it would be useful to understand whether items that moved from domain two to domain one required similar skills. For ease of comparison the percentage differences between the groups is shown in Table 25.

Table 25 SKILLS REQUIRED TO ACHIEVE ACTIVITY DOMAINS

ACTIVITY DOMAIN	NUMBER OF ITEMS REQUIRING MATHEMATICAL KNOWLEDGE	NUMBER OF ITEMS REQUIRING PHARMACOLOGY KNOWLEDGE	NUMBER OF ITEMS REQUIRING BASIC PRACTICAL SKILL	NUMBER OF ITEMS REQUIRING ADVANCED PRACTICAL SKILL
1 SIMPLE DOING NEW (N=30) ORIGINAL (N=16)	 1 (3.3%) 0 (0%)	 5 (16.7%) 1 (6.25%)	 29 (96.7%) 16 (100%)	 0 (0%) 0 (0%)
2 DOING/ COMMUNICATING ACTIVITIES NEW (N=44) ORIGINAL (N=70)	 4 (9.09%) 3 (4.28 %)	 23 (52.27%) 34 (48.57%)	 39 (88.63%) 65 (92.85%)	 3 (6.81%) 2 (2.85%)
3 SPECIFIC CARING ACTIVITIES NEW (N=65) ORIGINAL (N=62)	 6 (9.23%) 8 (12.92%)	 44 (67.69%) 41 (66.12%)	 45 (69.23%) 37 (59.67%)	 14 (21.53%) 18 (29.03%)
4 DECISION MAKING/ TEACHING ACTIVITIES NEW (N=49) OLD (N=44)	 8 (16.32%) 9 (20.45%)	 26 (53.06%) 24 (54.45%)	 14 (28.57%) 8 (18.18%)	 26 (53.06%) 28 (63.64%)
5 ADVENTURING ACTIVITIES NEW (N=13) OLD (N=9)	 4 (30.76%) 3 (33.33%)	 9 (69.23%) 7 (77.77%)	 0 (0%) 1 (11.1%)	 13 (100.00%) 8 (88.89%)
TOTAL NUMBER OF ACTIVITIES	23	107	127	56

11.3.2 Discussion

The grouping of activity items according to the skills required to achieve them can be seen, and if the percentages are again used for illustrative purposes, the trend of skills and knowledge required across the of each activity domains remained similar for all domains in all areas. Mathematical knowledge and Pharmacological knowledge continued to be represented proportionately more in the Activity Domains Three, Four and Five although the differentiation was not so large for Mathematical knowledge as previously. The representation of practical skills and advanced practical skills across the domains also remained comparable.

In light of the statistical evidence and the analysis of descriptors, it was appropriate to maintain the same descriptors for the activity domains used on this occasion. The theory that activities in medicine administration can be described according to the requirements for the achievement of items within them is upheld. These activity domains can be ranked by the mean involvement of respondents, and the descriptors identified a progressive trend of change from least involved to most involved or vice-versa. This is reliable in terms of internal consistency and has stability across time.

11.3.3 Activity Domains and the Biographic Details of their Constituents

This second part examined the response clusters and described their nature in relation to how respondents have rated the activity domains. Comparison with the original response clusters facilitates the description of the new clusters. Membership of the clusters was appraised in order to compare the student

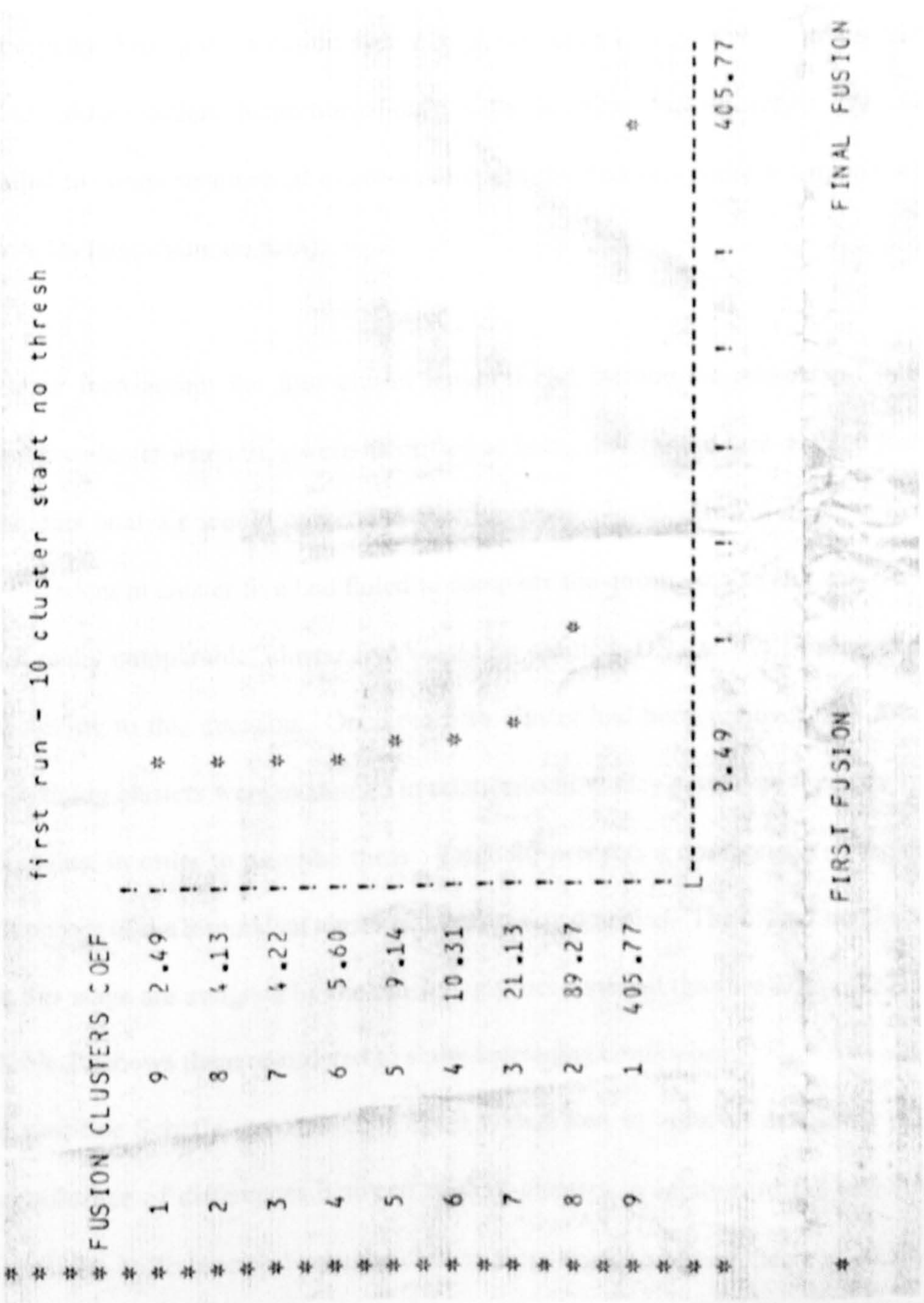
responses with those identified in chapter eight and to determine whether the control group responded similarly or differently to those in the study group.

On this occasion the important features relating to the clusters were:

- How response clusters could be characterised in relation to biographic information
- Whether response clusters could be ranked as before, according to their responses in all activity domains.
- Whether clusters showed increased involvement in some areas and not in others.
- Whether significant features identified in Chapter eight are also identifiable in these clusters.
- Whether there is any difference between the responses of students who responded as part of the control group and those in the study group
- How the responses of students and assessors compare

To address these points, the data matrix was reversed to cluster cases as variables and the clustering procedure using CARM was reiterated. From a starting point of ten random clusters with no threshold, the process continued until the respondents were relocated to a single group. As before the Fusion Plot was used to diagnose an appropriate cluster solution (Figure 12).

Figure 12 FUSION PLOT ILLUSTRATINGDIAGNOSIS OF RESPONDENT CLUSTERS



Upon initial inspection of the data, it appeared that the five cluster solution was the most appropriate to select. However, it was observed that one cluster in this solution had only got a membership of one respondent. The options were to accept the five cluster solution even though one had a cluster of one or to use the four cluster solution. Inspection of the raw data identified that this respondent had failed to complete much of questionnaire and the database consisted mostly of noughts (signifying no data).

Rather than accept the four cluster solution and include the respondent into another cluster when they were identified as being different, it was decided that the data analysis would proceed at the five-cluster level. However, since the respondent in cluster five had failed to complete the questionnaire and was thus not really comparable, cluster five would be omitted. Data analysis proceeded according to this decision. Once the fifth cluster had been removed, the four remaining clusters were examined in relation to how they perceived the activity domains, in order to describe them. Table 26 presents a comparison of mean responses of the respondent clusters to the activity domains. The cluster numbers at this stage are assigned by the clustering procedure and thus are not ranked. Table 26 shows them re-ordered to show increasing confidence.

A post-hoc Scheffe test was once again undertaken in order to determine the significance of differences between student clusters in relation to the activity domains. Differences between the clusters were found to be significant at <0.5% across the activity domains, indicating that the clusters were discrete. Again they could be ranked according to their mean score and were reordered thus: Original Clusters 1,2,3,4 become3,2,1,4.

Differences were as follows (using reordered clusters) significance as indicated is $p<0.05$.

Simple Doing Activities (1), Cluster one is less involved than two These are less involved than three and four who differ from each other but not significantly.

Doing /Communicating Activities (4): Cluster one is less involved than all other groups whilst cluster four is more involved. Two and three are not significantly different.

Specific Autonomous Caring Activities(2):

Cluster one is less involved than all other groups and four is more involved. Two and three are not significantly different.

Decision Making/ Teaching Activities (3):

All groups differ significantly from each other.

Adventuring Activities (5):

Clusters one and two are less involved than cluster four. There are no other significant differences.

When compared with the earlier research work that labelled the respondent clusters according to their mean responses in each activity domain, and then ranked according to their total mean score, the new clusters fitted in between the older ones as shown in Table 26. This process must be considered with some caution however, as the total mean score does not take account of differences between activity domains. Figure 11 indicates significant differences between each cluster according to each activity domain.

Table 26 MEAN RESPONSES OF CLUSTER GROUPS TO ACTIVITY DOMAINS AS COMPARED WITH CLUSTERING IN CHAPTER EIGHT

ACTIVITY DOMAINS	SIMPLE DOING	DOING/ COMMUNICATING	SPECIFIC AUTONOMOUS PRACTICE	DECISION MAKING/ TEACHING	ADVENTURING
OLD PASSIVE OBSERVER	1.98	1.30	1.18	1.18	1.15
NEW CLUSTER 3	2.37	1.83	1.65	1.29	1.15
OLD OBSERVER HELPER	2.60	1.91	1.46	1.18	1.14
NEW CLUSTER 2	2.67	2.29	2.02	1.63	1.30
OLD ENGAGED HELPER	2.84	2.32	1.92	1.53	1.44
NEW CLUSTER 1	2.78	2.53	2.21	1.97	1.57
OLD CAUTIOUS PRACTITIONER	2.93	2.76	2.58	2.10	1.67
NEW CLUSTER 4	2.95	2.82	2.68	2.39	1.90
OLD INDEPENDENT PRACTITIONER	2.97	2.95	2.9	2.76	2.16

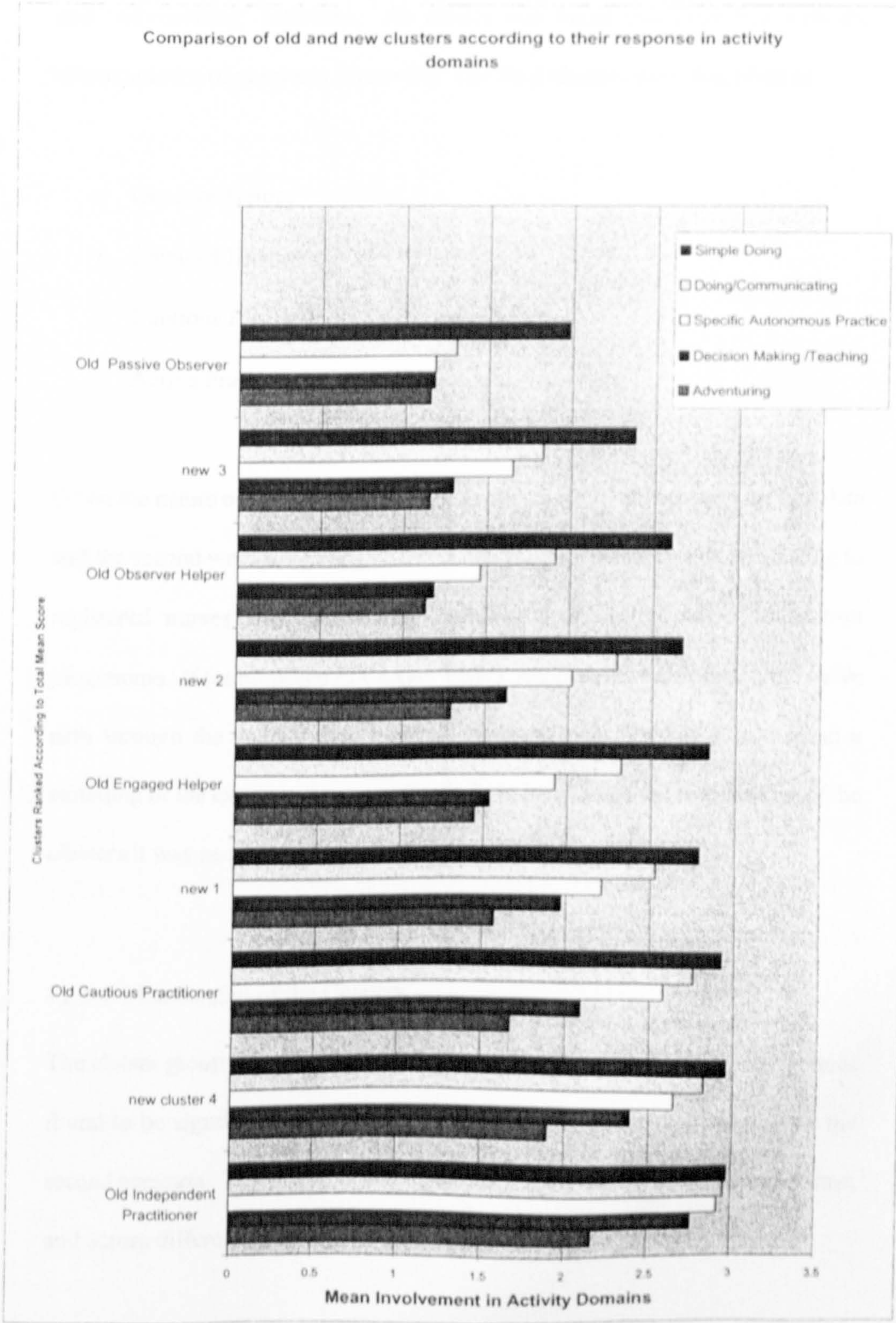
From the evidence presented, the following observations can be concluded:

- New Cluster Three appeared most like the old 'Helper/Observer' cluster. Both new cluster Three and the Observer/Helper Cluster demonstrated similar participation in Domains Two and Three. Their response was different compared to the passively observing cluster as these clusters were more involved in these domains.
- New Cluster Two appeared most like the 'Engaged Helper' cluster. The new cluster showed more involvement in decision-making teaching activities and in the specific autonomous practice domain than the

'Observer/Helper' clusters. The original descriptors defined a similar difference as a key feature between the 'Observer/ Helper' and the 'Engaged Helper' clusters.

- New Cluster One appeared most like the 'Cautiously Practitioner' cluster previously identified. They demonstrated less involvement than the old cluster in all Domains One and Two but higher involvement in Domains Four and Five. What made this cluster more like the 'Cautious Practitioner' cluster and less like the 'Engaged Helper' cluster was the involvement in decision making/ teaching activities (Domain Four).
- New Cluster Four appears represented between the Independent Practitioner cluster previously identified and the 'Cautiously Practice' cluster. The new cluster demonstrates more dependent involvement than the independent practitioner cluster in relation to all activity domains except simple doing activities, and this is noticeable in relation to decision making/teaching activities. This would imply that this group does not subscribe to the title 'Independent Practice' in the way that the previous cluster did. The group clearly however, demonstrates greater involvement in decision making/teaching activities and in adventuring activities than the old 'Cautious Practitioner' cluster, and it is statistically different from the remaining new clusters in relation to decision making teaching activities. A new title is thus required that reflects such differences.

Figure 13


Comparison of old and new clusters according to their response in activity domains
Simple Doing
Doing/Communicating
Specific Autonomous Practice
Decision Making /Teaching
Adventuring
Old Passive Observer
new 3
Old Observer Helper
new 2
Old Engaged Helper
new 1
Old Cautious Practitioner
new cluster 4
Old Independent Practitioner
Clusters Ranked According to Total Mean Score
0
0.5
1
1.5
2
2.5
3
3.5
Mean Involvement in Activity Domains

The title 'Active Practice' was selected because this reflected the independence in Activity Domains One, Two and Three, but highlighted limitations compared to the independent practitioner cluster in relation to 'Decision Making/Teaching' and 'Adventuring' activities. No cluster was found that identified with the characteristics of passively observing. The final clusters were described as

- Observer/Helper
- Engaged Helping
- Cautious Practitioner
- Active Practitioner

Given the nature of the second sample, the differences found between the first data and the second were reassuring. The second sample had no responses relating to registered nurses and no students included from the common foundation programme. If (as proposed in Chapter Eight), respondents followed a progressive path through the course, then limiting the sample in this way would mean a curtailing of the extreme responses. To find out more about the membership of the clusters it was necessary to examine the biographic data.

11.3.4 Membership of the Clusters.

The cluster groups were analysed in order to determine how biographic features found to be significant in the first part of the study could be described on the second occasion. This aimed to determine the stability of these findings over time, and across different sample groups.

Table 27 MEMBERSHIP OF CLUSTERS BY THE POSITION OF STUDENTS IN THE COURSE

POSITION IN COURSE	21 MONTHS N=15	27 MONTHS N=22	33 MONTHS N=8	POST-REG EQUIVALENT TO 21MONTHS N=3	POST-REG EQUIVALENT TO 27 MONTHS N=3
OBSERVING HELPING	9	1	0	0	0
ENGAGED HELPING	3	7	2	0	0
CAUTIOUS PRACTICE	3	5	1	0	1
ACTIVE PRACTICE	0	9	5	3	2

The clusters were also appraised in order to determine whether the study and control groups responded similarly. Table 27 shows that even with the small sample spread response across the groups (n=51), progression through the course remained evident. The post-registration students attending the shortened courses perceived a greater involvement in cautious practice and active practice clusters than those who were attending pre-registration courses.

Students identified within the 'helper/observer' cluster mostly had no previous experience related to nursing. Two out of twelve had 'other' health care related experience. None had any previous qualification in nursing. In the 'engaged helper' cluster, the picture was similar. Nine out of twelve had no experience, three had 'other' experience related to health care, but no nursing qualification. Of the seven respondents with a previous qualification in nursing, two were within the 'cautious practice' cluster and five were in the 'active practice' cluster. This supported the findings of the original research, which suggested that respondents

with a past qualification or experience in nursing or health care, respond significantly differently to those without. In conclusion, review of the first part of this research has enabled refinement of the cluster groups, in order to include both the parameters and the specificity afforded by the two samples. The final groups were as follows:

- Passive Observers
- Observer Helpers
- Engaged Helpers
- Cautious Practitioners
- Active Practitioner
- Independent Practitioners

11.3.5 Comparison Of Student And Assessor Ratings

This final part of the research determined whether students in practice perceived their involvement in medicine administration practice in the same way as their practice assessors. Students and assessors were compared to identify involvement across all the activity domains, as the analysis of the clusters identified significant differences that were not always based on all five domains. A control group was used for this part of the study to determine whether students had similar self-perceptions of their involvement when they were being assessed by a registered nurse, compared with when they were assessing alone. This is an important consideration in relation to the earlier work, as that the whole response group assessed alone. Examination of the data indicated that within the study group,

respondents were spread similarly across the clusters (Table 28). At 27 months into the course, there appeared to be variation between control and study group, with half of the control group included within the 'active practice' cluster. However, the largest sample of responses was included in this group and numbers were generally small across the groups. It is notable that this group had a wider range than the study group. However, little can be concluded from these results because of the eventual sample size of the sub-groups. There may be some variation in the responses of students who perceived that they were being assessed compared with those who were not, for students who were midway through their child branch experience. Those who have a greater or lesser experience appeared to respond similarly irrespective of whether they were in the study or control groups. Indeed, the significant features identified in Chapter Eight appeared consistent within this review (Table 28).

Table 28 COMPARISON OF CLUSTER MEMBERSHIP ACCORDING TO MEMBERSHIP OF STUDY OR CONTROL GROUP

POSITION IN COURSE	21 MONTHS N=15		27 MONTHS N=22		33 MONTHS N=8		POST-RUG EQUIVALENT TO 21 MONTHS N=3		POST-RUG EQUIVALENT TO 27 MONTHS N=3		TOTAL
STUDY (S) OR CONTROL (C) GROUP	S	C	S	C	S	C	S	C	S	C	
HELPING OBSERVING	5	4	0	1	0	0	0	0	0	0	10
ENGAGED HELPING	1	2	3	4	2	0	0	0	0	0	12
CAUTIOUS PRACTICE	2	1	3	2	0	1	0	0	0	1	10
ACTIVE PRACTICE	0	0	2	7	2	3	1	2	0	2	19
TOTAL	8	7	8	14	4	4	1	3	0	3	51

Table 29 COMPARISON OF CLUSTER MEMBERSHIP BETWEEN STUDENT AND ASSESSOR PAIRINGS

ID/DOMAIN	SMALL DOING	DOING /COMM	STRUC AUTONOMOUS PRACTICE	DECISION MAKING TEACHING	ADVENTURING	CLUSTER	SIGNIFICANT DIFFERENCES
ID2&1	P<0.05	NS	P<0.05	P<0.05	NS	HLCP	3DIF
ID4&7	P<0.05	P<0.05	P<0.05	P<0.05	NS	OHEH	4DIF
ID5&6	P<0.05	P<0.05	P<0.05	P<0.05	P<0.05	APEH	ALLDIF
ID8&9	NS	P<0.05	P<0.05	P<0.05	NS	CPAP	2DIF
ID10&11	NS	NS	NS	NS	NS	HLEH	0DIF
ID13&12	P<0.05	P<0.05	P<0.05	P<0.05	NS	HLOH	4DIF
ID15&17	NS	P<0.05	P<0.05	P<0.05	NS	APCP	1DIF
ID14&16	P<0.05	P<0.05	P<0.05	P<0.05	NS	OHCP	4DIF
ID18&19	P<0.05	P<0.05	P<0.05	P<0.05	P<0.05	APEH	1DIF
ID20&21	P<0.05	P<0.05	P<0.05	P<0.05	P<0.05	APEH	ALLDIF
ID22&23	P<0.05	P<0.05	P<0.05	P<0.05	NS	OHEH	4DIF
ID24&25	NS	P<.05	P<0.05	P<0.05	NS	CPAP	3DIF
ID27&26	P<0.05	P<0.05	P<0.05	P<0.05	P<0.05	APEH	ALLDIF
ID29&28	NS	P<0.05	P<0.05	P<0.05	NS	APCP	2DIF
ID30&31	P<0.05	P<0.05	P<0.05	P<0.05	P<0.05	APEH	ALLDIF
ID33 &34	P<0.05	NS	P<0.05	P<0.05	NS	HLCP	3DIF
ID35&36	NS	NS	NS	NS	NS	HLEH	0DIF
ID37&38	P<0.05	P<0.05	P<0.05	P<0.05	NS	HLOH	4DIF
ID42&43	P<0.05	P<0.05	P<0.05	P<0.05	P<0.05	HLAP	ALLDIF

An indicator about whether students and assessors view role function in practice similarly, was first determined through inspection of the cluster membership. Of the 19 paired assessments finally concluded, the results demonstrated only two pairings that clustered similarly (Table 29).

The remaining 17 pairs identified significantly different involvement in the activity domains. If the notion of ranking the cluster groups according to their overall level of involvement in the domains is accepted, then nine pairs identified that the assessor perceived the student would subscribe to a cluster requiring higher involvement than the student perceived themselves, while eight assessors perceived students as subscribing to a cluster requiring lower involvement than the student perceived. Such differences might initially appear to question the point

of assessing students. However, this is only part of the evaluation. When examining why students and assessors clustered differently. It may be because they identify a difference in one particular domain that is significant to cluster membership. It is pertinent to ask how typical respondents may be to their cluster because a cluster member maybe typical in significant aspects but atypical in those that would not differentiate the clusters.

To establish the implications of the different clusters, the involvement of students and assessors was further analysed in two ways. First, the assessor and student responses were compared in activity domain using individual mean scores. This enabled an overview of the respondent profiles to be compared. This overview was helpful in reviewing pairings that appeared widely different in all domains, and determined those showing similarities in some domains but not in others.

Review of trends within the pairings was undertaken by comparison of the cluster mean score in each domain. Table 30 shows the difference between means for each pair. This review showed similarities between each of the 19 pairs of assessments. Only three (ID 5&6,10&11 and 30&31) showed residual differences of greater than 0.2 within their mean scores in all five activity domains. Using this parameter, five pairs were similar in one domain and different in four (ID 12&13, 14&16,20&21, 24&25 26&27) whilst two were different in three domains (ID 33&34, 37&38). Three (ID 4&7, 8&9, 42&43) were similar in three domains but different in two, and five pairs had only one domain with a mean score difference of greater than 0.2. One pair scored all five domains similarly. The respondents therefore, do not in most cases respond to all domains differently in terms of their

mean score. This improves the position for the use of the current assessment strategy, but suggests that there are areas where students and assessors perceive involvement significantly differently.

Three pairs did have different perceptions. In two cases the respondents clustered differently, and on both occasions the student assessed themselves as having a greater involvement in all domains than their assessors did. In the third case (ID 10 and 11) the student and assessor clustered in the same cluster.

The significant differences attributed to cluster membership do create differentiation between clusters for the assessor and student. The profiles of student and assessor are typically similar in many respects, but have important features that mean they cluster differently. Examination of individual profiles serves to explore these differences in greater detail.

Table 30 DIFFERENCES BETWEEN MEAN ACTIVITY DOMAIN SCORES OF PAIRINGS

ID/Domain	Small Doing	Doing/ Communicating	Social/ Autonomous Practice	Decision Making/ Teaching	Adventuring	Cluster	Residual Diff>2
ID 2&1	0.17	0.2	0.2	0.06	0.16	EII,CP	0 DIFF
ID 4&7	0.93	0.66	0.04	0.14	0	OII,EII	2 DIFF
ID 5&6	0.57	0.86	0.99	0.47	0.69	AP,EII	ALL DIFF
ID 8&9	0	0.04	0.4	0.23	0.16	CP,AP	2 DIFF
ID10&11	0.36	0.4	0.6	0.28	0.38	EII,EII	ALL DIFF
ID 13&12	0.47	0.98	0.49	0.19	0.46	EII,OII	4DIFF
ID 15&17	0	0.25	0.05	0.16	0	AP,CP	1 DIFF
ID 14&16	0.1	0.21	0.31	0.63	0.39	OII,CP	4 DIFF
ID 18&19	0.04	0	0.13	0.45	0.08	AP,EII	1 DIFF
ID 20&21	0.1	0.41	0.23	0.22	0.31	AP,EII	4 DIFF
ID 22&23	0.13	0.25	0.2	0.1	0.08	OII,EII	1 DIFF
ID 24&25	0.17	0.25	0.45	0.78	1.23	CP,AP	4 DIFF
ID 27&26	0.36	0.29	0.11	0.51	0.54	AP,EII	4 DIFF
ID 29&28	0.07	0.05	0.03	0.11	0.46	AP,CP	1 DIFF
ID 30&31	0.3	0.61	0.89	1.06	0.92	AP,EII	ALL DIFF
ID 33 &34		0.02	0.01	0.47	0.54	EII,CP	3 DIFF
ID 35&36	0.03	0.14	0.08	0.02	0.47	EII,EII	1 DIFF
ID 37&38	0.77	0.87	0.44	0.16	0.15	EII,OII	3 DIFF
ID 42&43	0.1	0.16	0.14	0.47	0.93	EII,AP	2 DIFF

11.3.6 The Generation of Profiles.

Generation of profiles of involvement offers another way to examine differences. Although pairings may respond similarly in terms of mean score, individual scores may vary resulting in differences in the profile of scores. For example, the assessors may rate the student as being able to achieve half the items unaided (scoring 3) whilst being unable to achieve the remainder at all (scoring 1). At the same time the student may perceive that they can achieve all items with supervision (scoring 2). Responses may be compared in relation to all items within each activity domain by generating individual profiles of scores (Youngman, 1980; 1982). To do this for every individual, each of the 201 items were cross-matched with the activity cluster and the score noted. The total 1,2 and 3 scores within each domain were then summed and percentages were created. The percentage profiles for each domain were then shown in a bar chart. It was decided to create profiles for a small number of the total cases to illuminate findings established through the clustering process.

Looking at identifier codes in the biographic data initially identified the cases. Those that had responded fully on both data collections were appraised. This offered the opportunity to review differences in perceived involvement by the student on two occasions, and examine how they compared with two different assessors. This exercise identified five case studies consisting of four responses each. The case studies are presented below.

Case Study One (ID 4,5,6&7)

Case Study One was a student who participated at 21 months and 27 months into the pre-registration Child Branch Diploma course, and had no previous nursing experience. The student performed the assessment in their first ward-based placement and then six months later in a more specialised placement.

The student initially clustered into the observer helper cluster and was assessed as an engaged helper. Six months later, the student assessed as an active practitioner, whilst the assessor determined the student as a cautious practitioner. Appraisal of mean scores on both occasions demonstrated differences in the perceptions of the students and assessors profiles. Figure 15 indicates that the student initially viewed themselves as unable to complete most activities. However, they identified themselves as able to perform 70% of simple doing activities with supervision. The assessor was more optimistic, identifying that the student could participate in 80% of simple doing activities with supervision. The biggest differences, and the one likely to have led to a difference in clustering between the student as an observer helper and the assessor identifying the student as an engaged helper related to activities requiring doing communicating activities, where 80.09% were identified as being possible with supervision. This compared to the students 22.72%. The assessor also suggested that the student would be able to participate in 60% of activities requiring specific autonomous practice with supervision. The student viewed this aspect very differently again with only 4% of activities included at this level. The remaining activities were considered unable to be completed.

At 27 months the student perceived themselves as much more involved in all areas of practice (Figures 16,17).

As shown in Figure 16, most simple doing, doing communicating and specific autonomous practice activities could be completed unaided, and activities requiring decision making/teaching were perceived mostly as possible unaided or with supervision. In six months the student perceived they had had moved from observing and helping, to actively practicing.

The second supervisor was more cautious but acknowledged a higher level of involvement in the role than the first assessor had done. The student identified that they could complete 90% of specific autonomous practical activities and 46.94% of decision making teaching activities unaided. This compared with the assessors response of 1.5% and 0%. There were also differences between assessor and student relating to doing communicating activities, where the student felt most activities could be achieved unaided, whilst the assessor felt that most needed supervision.

Comment

The student illustrated that their involvement in medicine administration activities has increased significantly in the first six months of the child branch programme (Figure 17). The first assessor demonstrated greater confidence than the student in their involvement whilst the second assessor was more cautious (Figures 15,16). However, the perceptions of involvement in the role were different for assessor and student on both occasions.

Figure 14 CASE STUDY ONE COMPARISON WITH ACTIVITY DOMAIN MEAN SCORES (dms)

	Simple Doing	Doing/ Communicating	Specific Autonomous Practice	Decision Making	Adventuring
Observer Helper (dms)	2.38	1.83	1.65	1.29	1.15
Student 21 months	1.90	1.23	1.08	1.02	1.00
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Assessor 21 months	2.83	1.89	1.62	1.16	1.00
Active Practitioner (dms)	2.95	2.82	2.64	2.39	1.90
Student 27 months	2.97	2.93	2.91	2.41	1.38
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Assessor 27 months	2.40	2.07	1.92	1.94	2.07

Figure 15 CASE STUDY ONE

PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 21 MONTHS

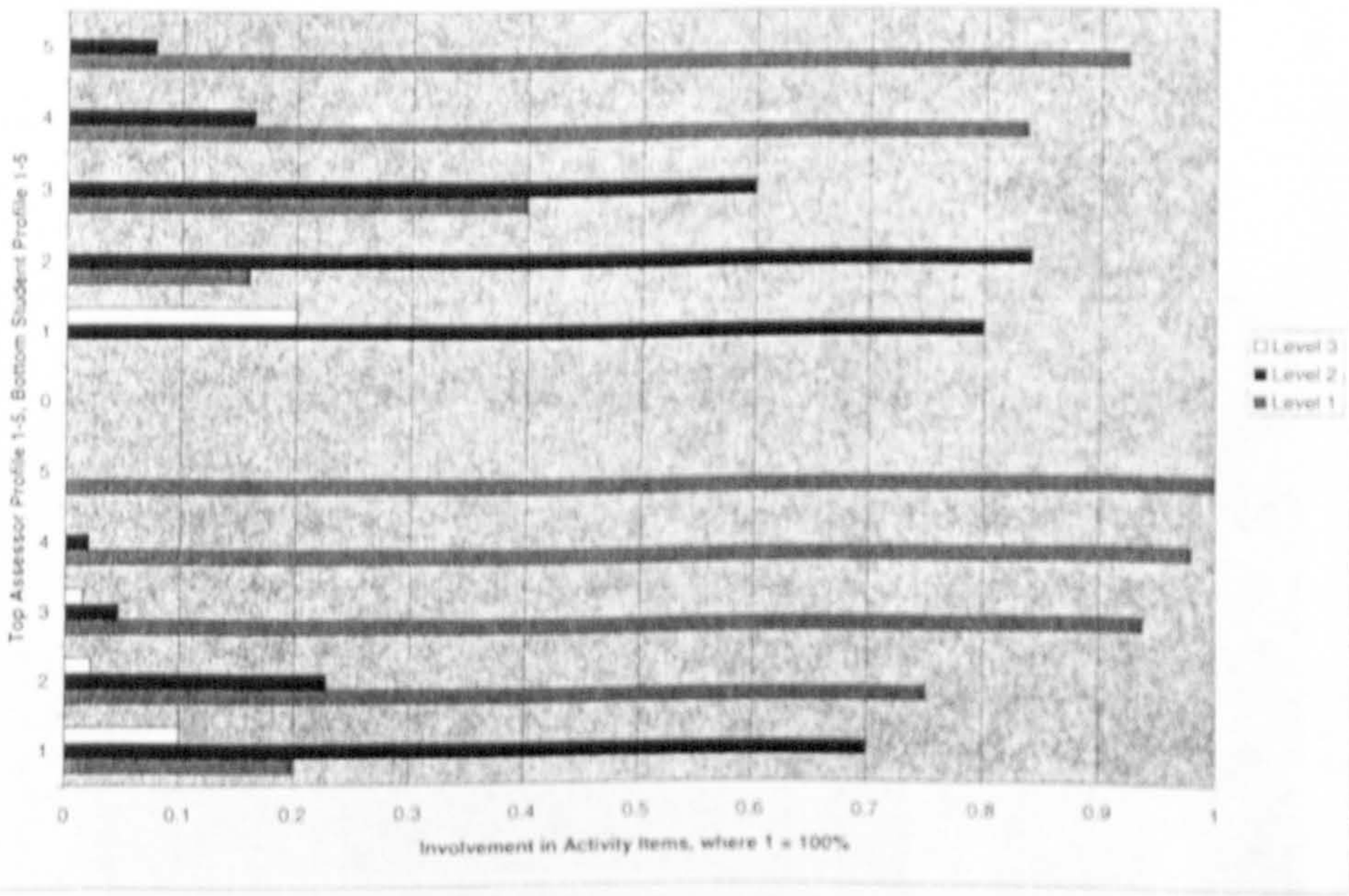


Figure 16 CASE STUDY ONE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 MONTHS

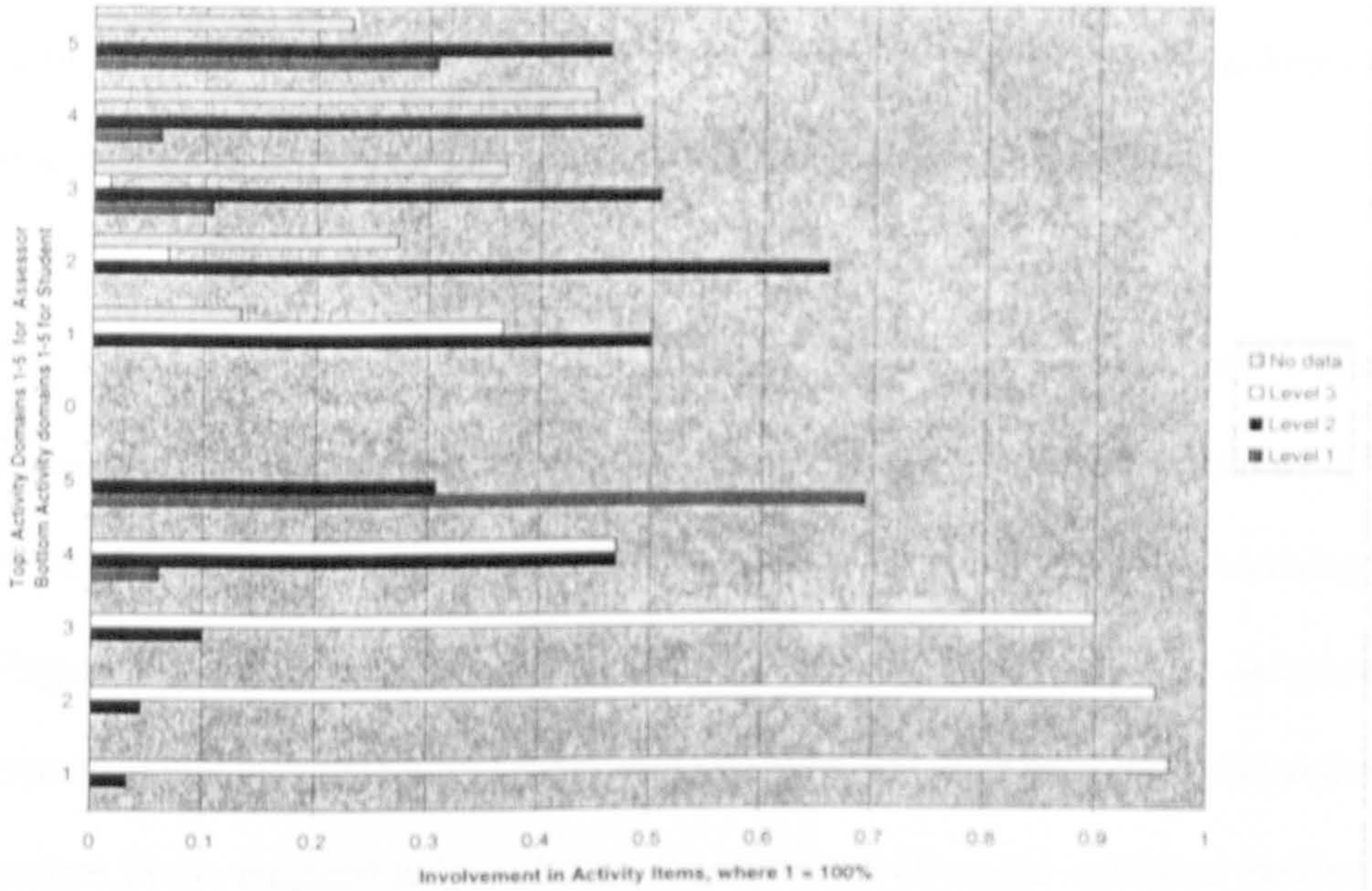
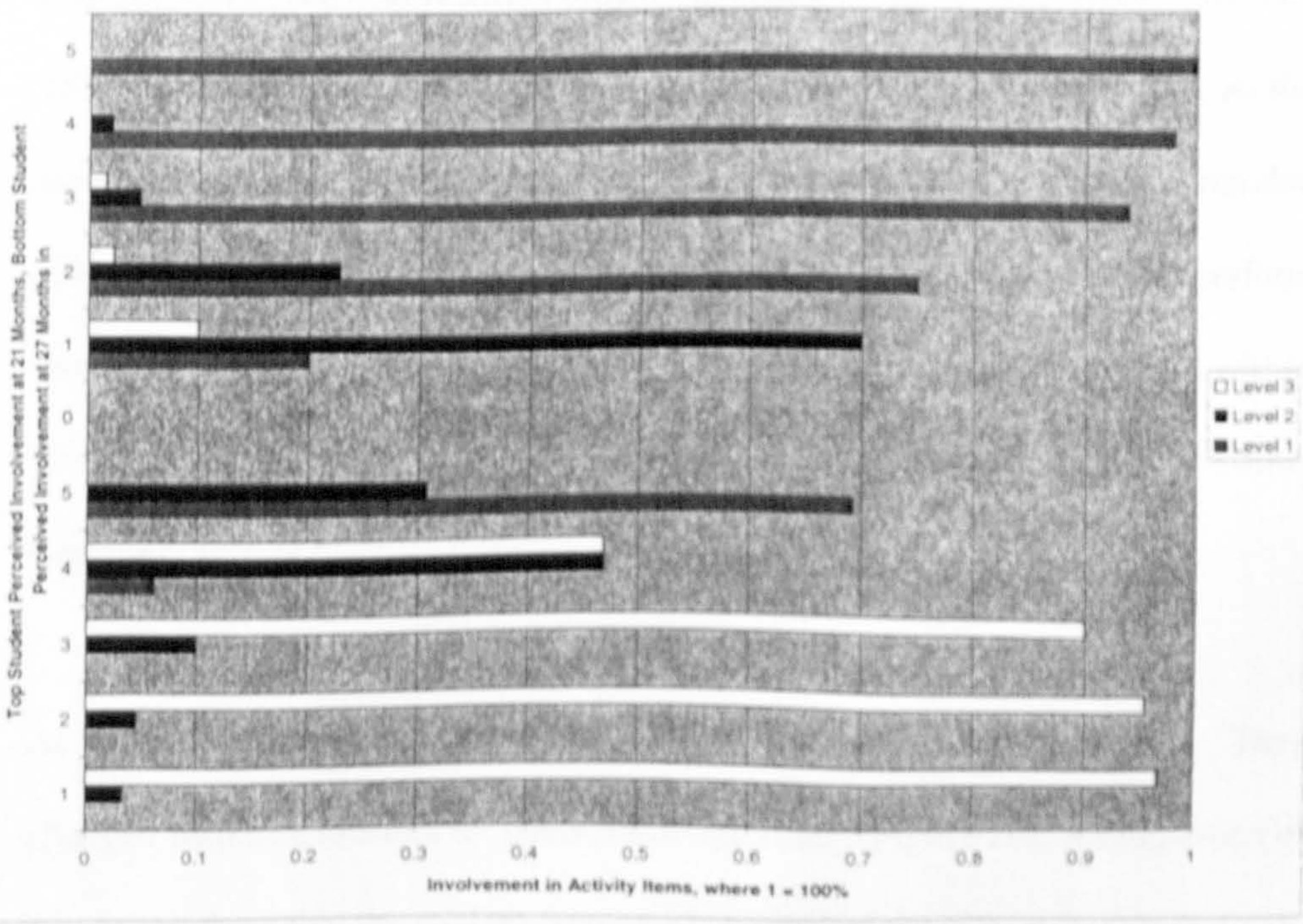


Figure 17 CASE STUDY ONE
PROFILES OF STUDENT PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 21 AND 27 MONTHS



Case Study Two (ID 22,23,24,25)

Case Study Two responded to the questionnaire at 21 months and 27 months into the course. They attended pre-registration Child branch diploma course and had no previous nursing experience and undertook assessment in their first ward-based placement and again in six months later in the specialised placement.

The student initially clustered into the 'observer helper' cluster, and when compared with the domain mean score for this cluster, appeared typical of the cluster in all domains except for activities relating to 'decision making/teaching' (Figure 18). Here the student perceived greater involvement. The assessor perceived that the student was more able however, and their responses placed the student in the engaged helper cluster. Comparison of means indicated greatest differences in doing communicating activities (Figure 19).

Comparison of the involvement profiles presented a different picture, however. Differences between doing and communicating activities were evident, as the assessor identified that the student could participate in more activities unaided (40%) compared with the student's perception of 10%. The student would perform most of these activities under supervision. This pattern was also evident within simple doing activities where the student again perceived a lower involvement than their assessor.

At 27 months the student increased their involvement in the activities. They changed response clusters to 'cautious practitioner' (Figure 20). Comparison of the means show that the student response is typical of the cluster except that they

again show an increased involvement in activities requiring decision making teaching than the domain mean, and a lower response in relation to specific autonomous practice.

When examining the profiles, it was evident that the student increased their involvement in all areas (Figure 21). They perceived themselves as able to undertake many activities related to simple doing and doing and communicating and specific autonomous practice unaided. Their assessor perceived them to be more involved in most areas, and clustered them in the active practice cluster. Looking at the domain mean score, the assessor identified similarly but they recorded an increased involvement in domains relating to decision making and teaching and to adventuring. In relation to specific autonomous practice however, they were perceived as having less involvement.

Comment

This student's data again illustrated progression through the course at a rapid pace, moving in their own perception from observer helper to cautious practitioner within the six month period. This was supported by the assessor's perceptions of engaged helper then active practitioner. Areas to consider when looking for differences in these clusters relate to simple doing and doing- communicating activities between observer helper and engaged helper, and these were noted as being different.

The higher than cluster score involvement in decision-making activities was notable. It appeared on both occasions in the student assessment and also in the

Figure 18 CASE STUDY TWO COMPARISON WITH ACTIVITY DOMAIN MEAN SCORES (dms)

	Simple Doing	Doing/ Communicating	Specific Autonomous Practice	Decision Making	Adventuring
Observer Helper (dms)	2.38	1.83	1.65	1.29	1.15
Student 21 months	2.50	1.83	1.37	2.02	1.15
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Assessor 21 months	2.63	1.63	1.27	2.27	1.23
Cautious Practitioner (dms)	2.79	2.53	2.21	1.97	1.57
Student 27 months	2.83	2.40	1.98	2.73	1.62
Active Practitioner (Dms)	2.95	2.82	2.64	2.39	1.90
Assessor 27 months	3.00	2.85	2.76	2.98	2.85

Figure 19 CASE STUDY TWO
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 21 MONTHS

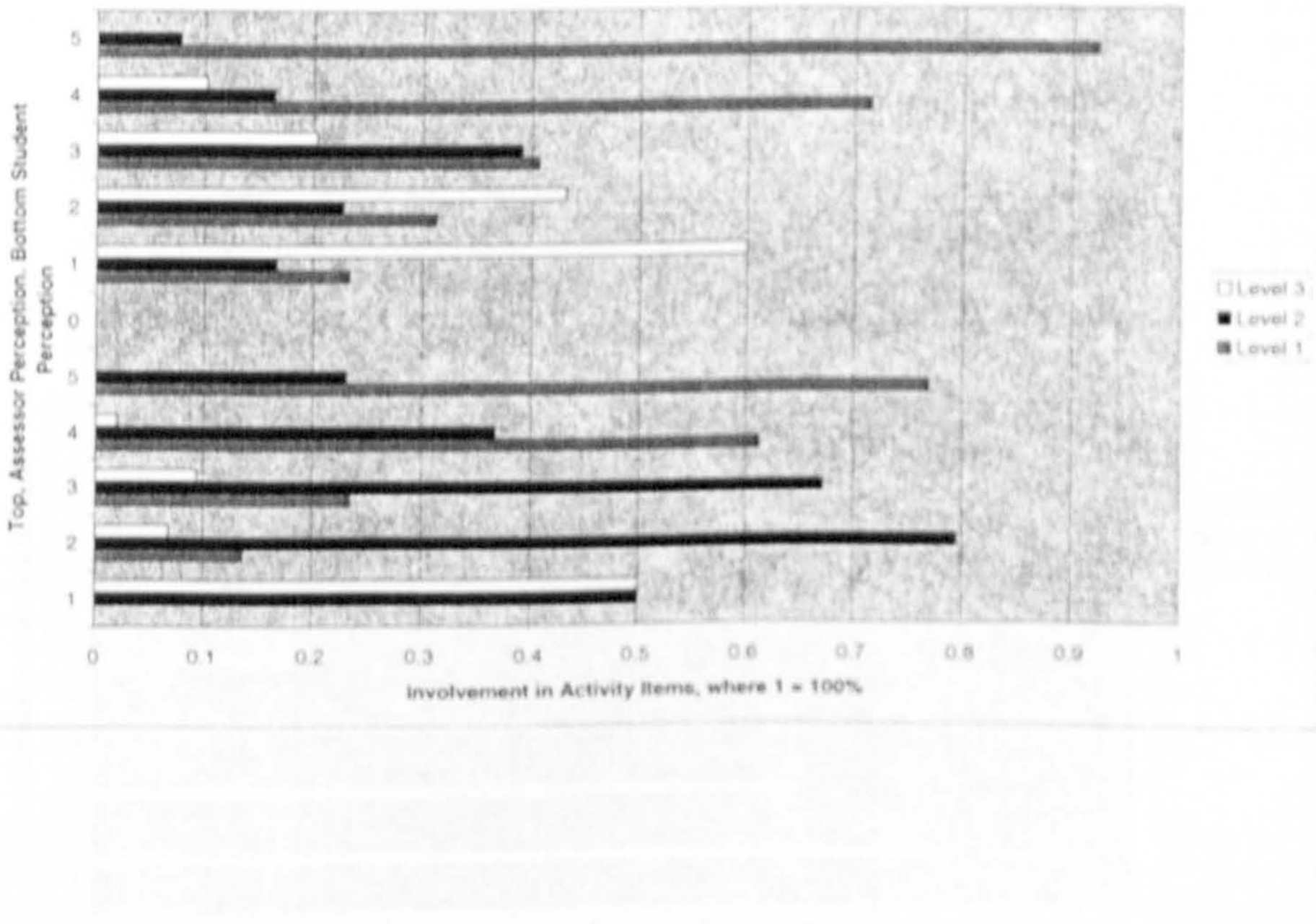


Figure 20 CASE STUDY TWO
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 MONTHS

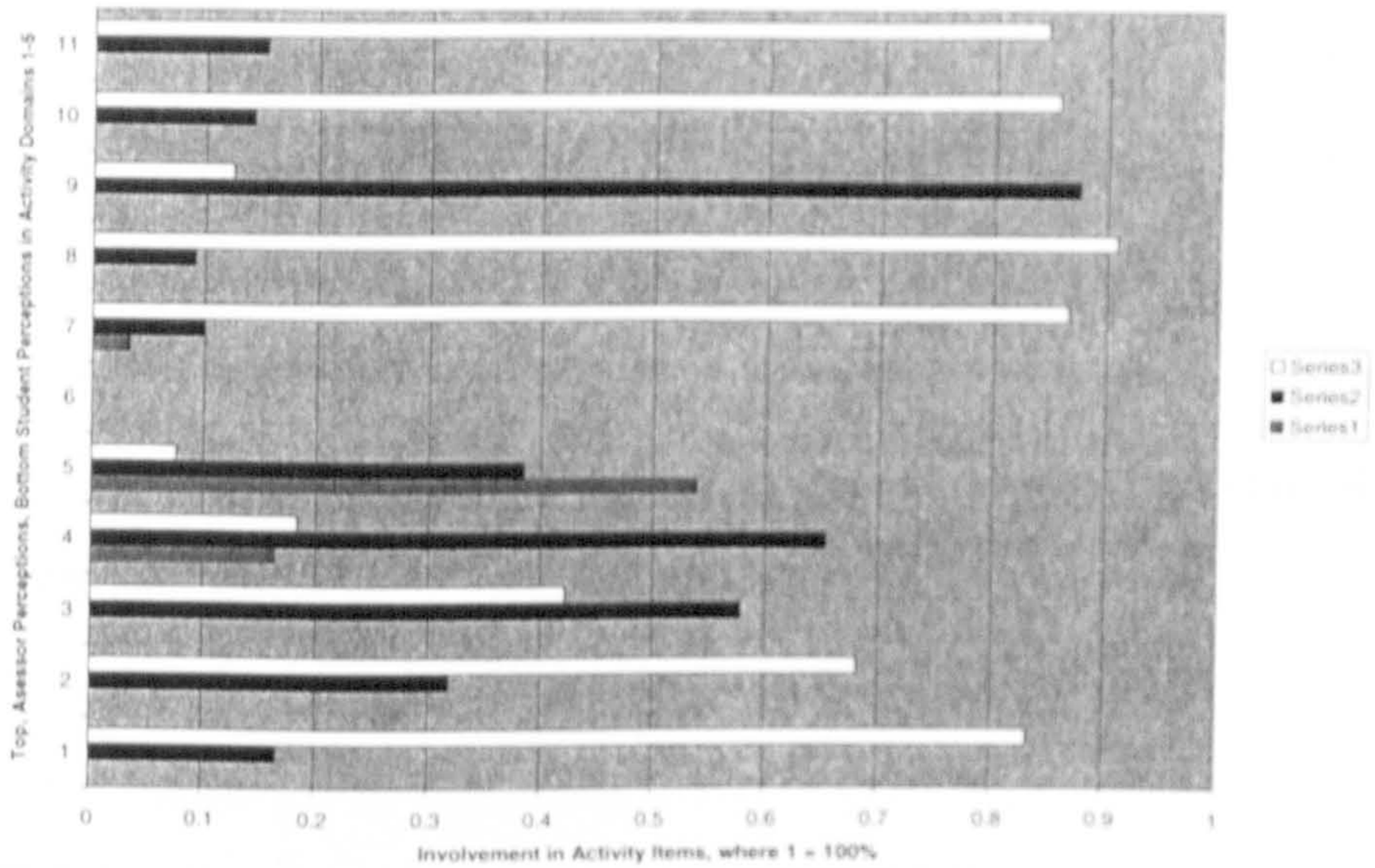
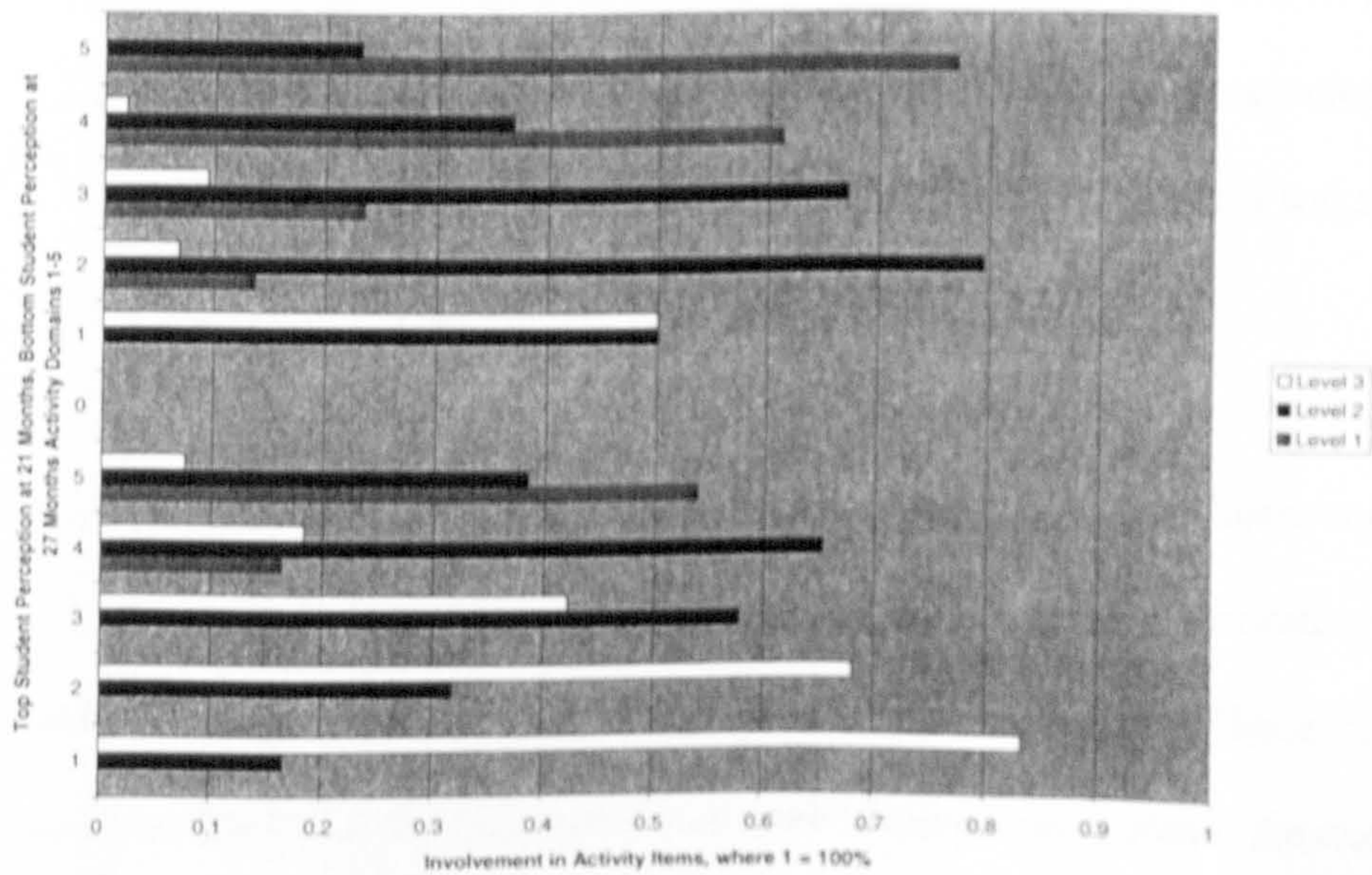


Figure 21 CASE STUDY TWO
PROFILES OF STUDENT PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 21 AND 27 MONTHS



assessor profiles. However, this was not significant in the difference between clustering for the first assessment, because there is no significant difference between the 'observer helpers' and 'engaged practitioners'. It is however a significant difference between active and cautious practitioners and thus offers one explanation for differences in clustering between assessor and student.

When examining the profiles, the differences between assessor and student perceptions were notable. The assessors perceived a higher level of involvement in most activity areas.

Case Study Three (ID, 14,15,16,17)

Case Study Three responded to the questionnaire at 21 months and 27 months into the course. The student was undertaking the pre-registration Child branch diploma course and had some previous health care experience but not as a registered nurse. They undertook the assessment in their first ward-based placement and again in six months later in the specialised placement.

This respondent initially clustered in the cautious practitioner cluster and upon examination showed typicality to the cluster except in communicating doing activities where the student showed an increased mean score (See Figure 22). The assessor identified that the student was more involved and assessed the student as 'actively practising'. The assessor demonstrated typicality to the active practice cluster in all domains. Comparison of cluster means suggested that the student demonstrated greater involvement in communicating doing activities but less

involvement in activities relating to specific autonomous practice, decision making teaching and adventuring activities.

Examination of the involvement profiles mostly supported the above evidence (Figures 23,24,25) The student identified a lower level of involvement in the areas relating to all activities. Most important in this case however, was the size of difference between assessor and student in relation to the level at which they were assessed in adventuring and decision making teaching activities The assessor identified that the student could be involved in 70% of adventuring activities with supervision while the student only felt able to participate in 30%with supervision. In Decision making teaching activities the assessor perceived that the student could be involved in 45% of activities unaided, 50% with supervision and would only be unable to participate in 5%. The student however, identified only 5% that they could achieve unaided, 65%with supervision and would be unable to achieve 31% at all. This domain would differentiate between clusters.

At 27 months the student recorded a similar pattern of mean scores to the 21 month assessment. However, they clustered as actively practicing. They were assessor assessed this time as being a cautious practitioner. Differences between assessor and student appeared most clearly in relation to communicating doing activities, where the student scored more highly. In decision making teaching activities the student has a lower mean score. This makes this appraisal difficult using just the domain mean scores.

Figure 22 CASE STUDY THREE COMPARISON WITH ACTIVITY DOMAIN MEAN SCORES (dms)

	Simple Doing	Doing/ Communicating	Specific autonomous practice	Decision making	Adventuring
Cautious Practitioner (dms)	2.79	2.53	2.21	1.97	1.57
Student 21 months	2.90	2.98	2.14	1.76	1.46
Active practitioner (Dms)	2.95	2.82	2.64	2.39	1.90
Assessor 21months	2.80	2.77	2.45	2.39	1.85
Active practitioner (Dms)	2.95	2.82	2.64	2.39	1.90
Student 27months	2.90	2.98	2.35	1.94	1.46
Cautious Practitioner (dms)	2.79	2.53	2.21	1.97	1.57
Assessor 27 months	2.90	2.75	2.37	2.10	1.46

Figure 23 CASE STUDY THREE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 21 MONTHS

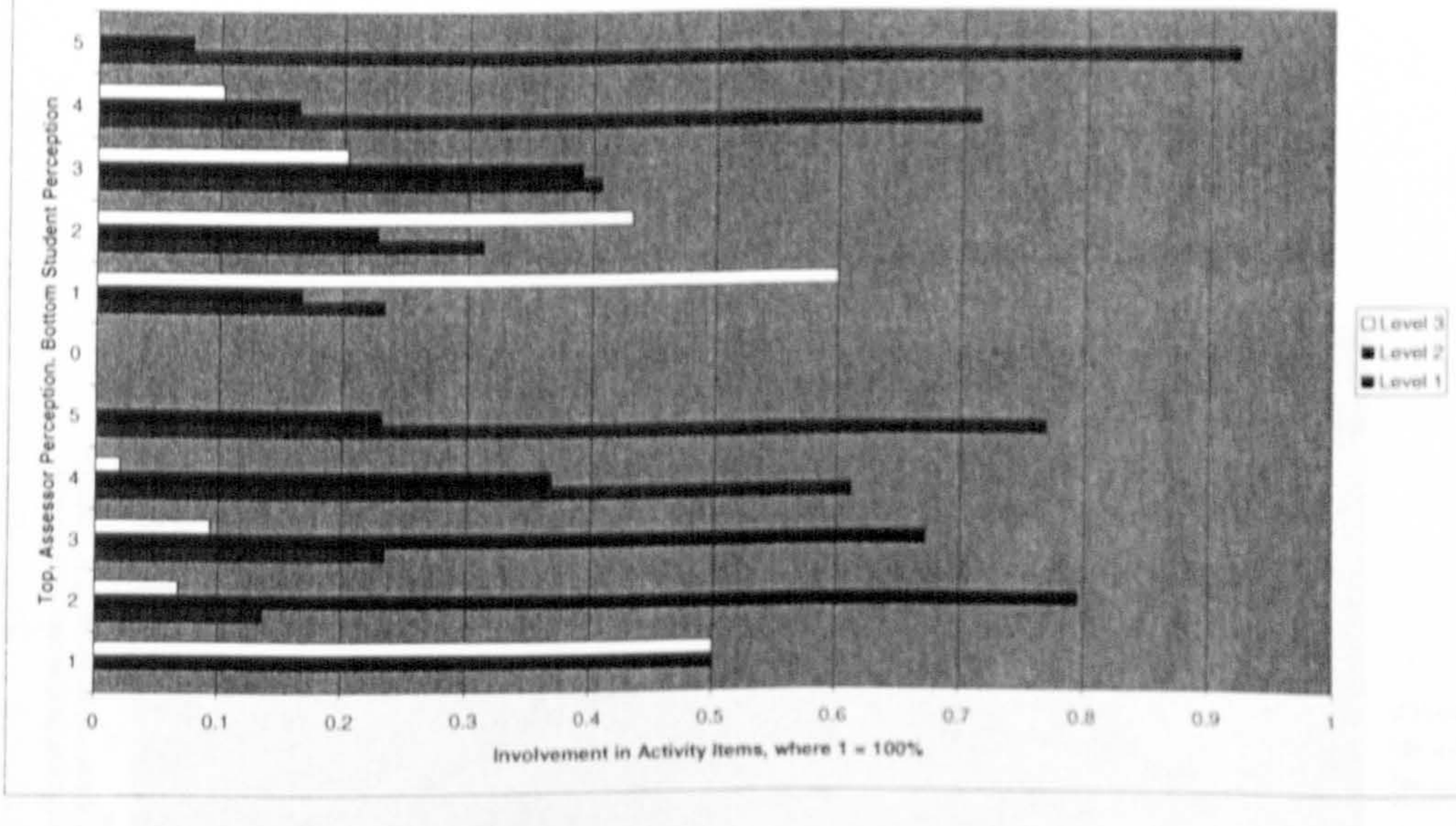


Figure 24 CASE STUDY THREE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 MONTHS

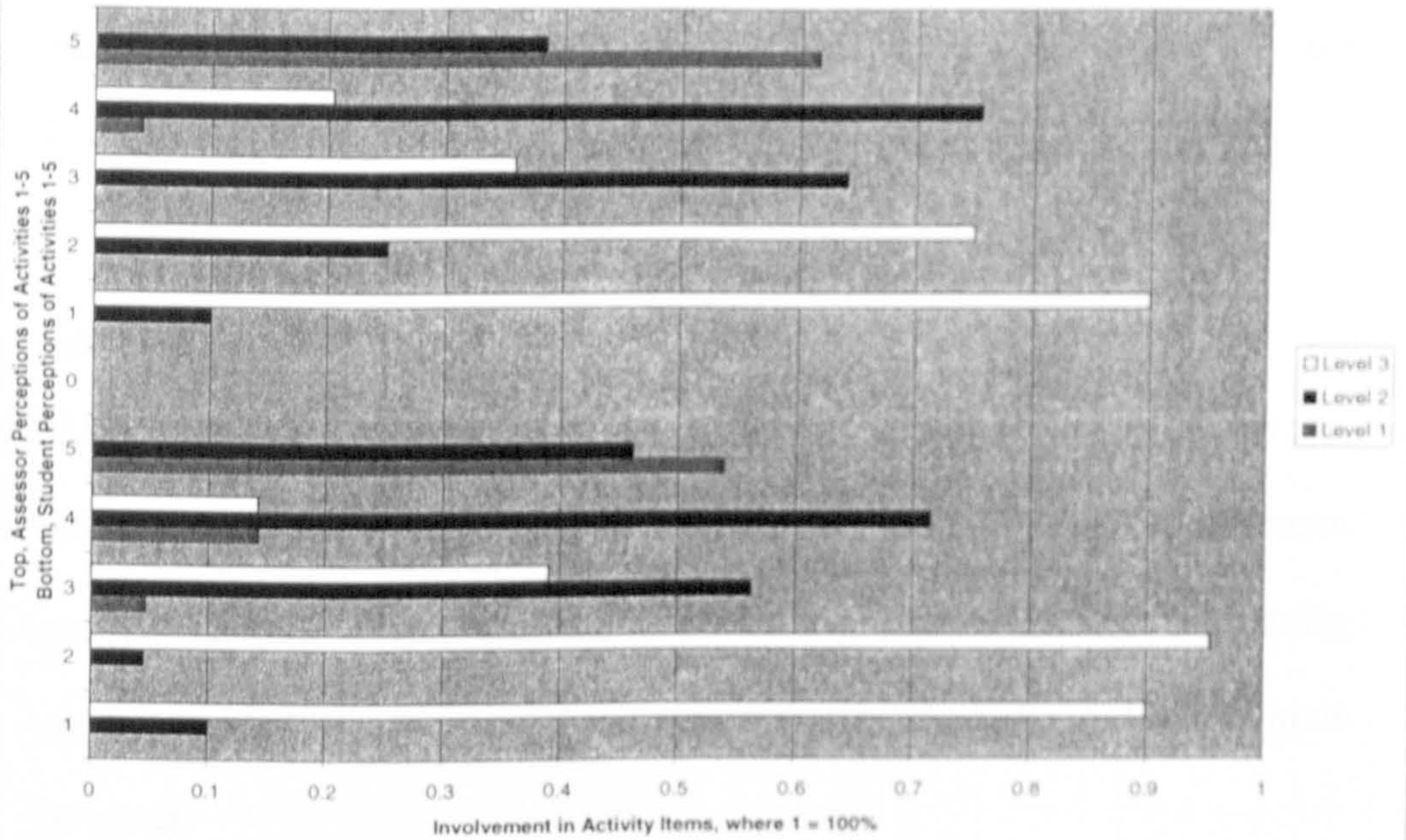
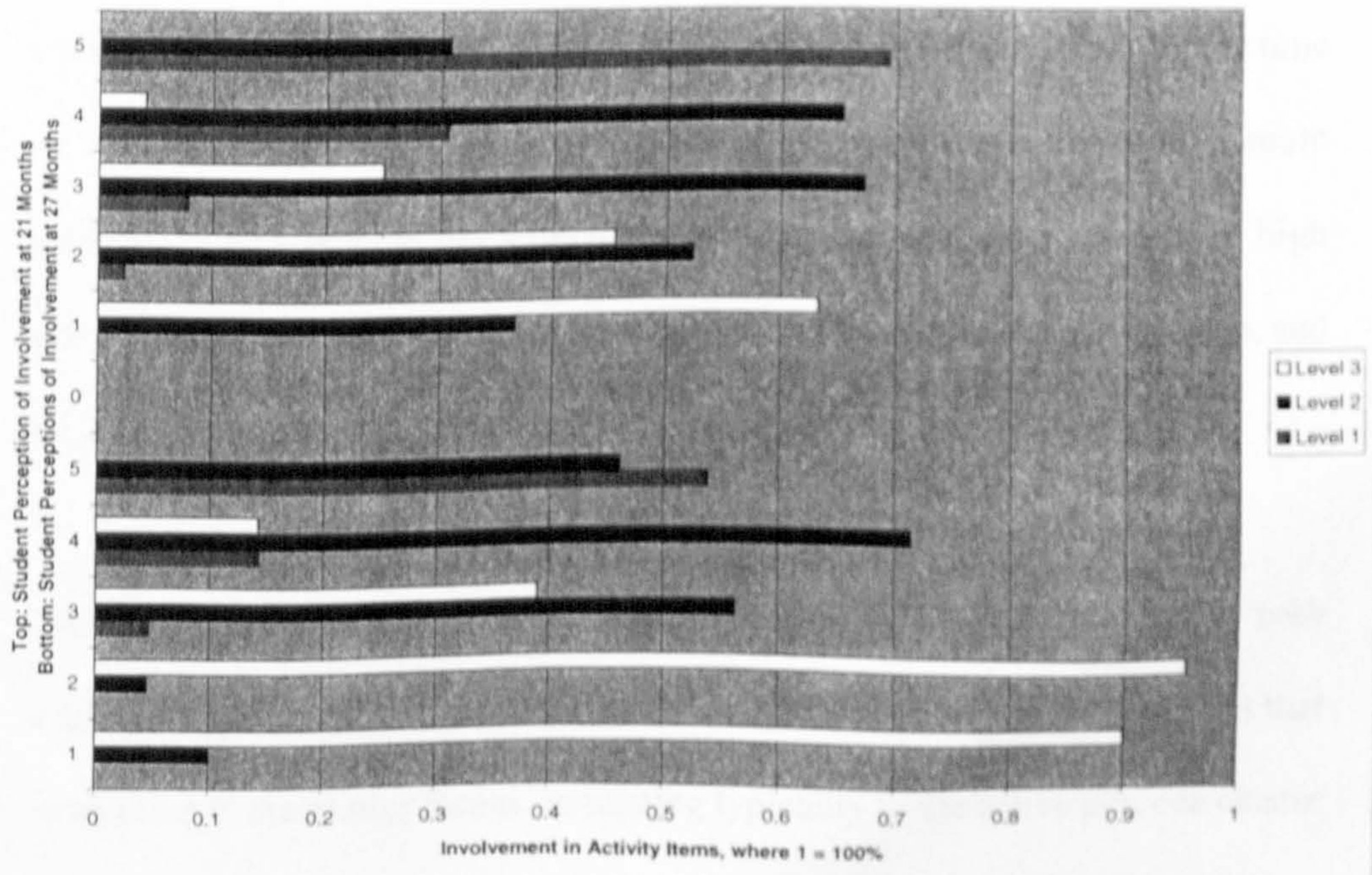


Figure 25 CASE STUDY THREE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 21 AND 27 MONTHS



If the involvement profiles are examined, the features identified in the mean scores are evident. Differences in clustering relate to perceptions of adventuring activities and doing communicating activities where the student demonstrated more involvement. These areas are significantly different within the clusters.

Comment.

This student was assessed in differing clusters by both assessors. However, the first assessor perceived more involvement than the student. The second assessment was closer, but was differentiated by involvement in doing communicating activities and adventuring activities where the student was more involved.

Case Study Four (ID 28,29,30,31)

This student was assessed at 27months and 33 months in to the course, and had completed a minimum of thirteen weeks of hospital ward placements. At the time of the assessment they would have been attending a placement in a more specialised area of children's nursing (such as intensive care, trauma, or high dependency care). The student was attending the three year diploma course, and had some previous health care experience but not as a registered nurse.

Here was a confident respondent, who identified in 'active practice' on both occasions. On the first occasion, they reflected mean scores in each domain that were close to the cluster means, indicating typicality to the active practice cluster (See Figures 26). On the second occasion, the student perceived themselves more

involvement in specific autonomous practice and in activities requiring decision-making teaching, than the cluster mean. The assessors on both occasions perceived less involvement than the student (See Figures 27 and 28). The first assessor identified the student as being involved in 'cautious practice'. However, closer inspection of the domain mean scores, indicated that the assessor was not typical of the cautious practice cluster, with most of the domain mean scores ranking above the cluster mean and much more typical of the active practice clusters. When examining the profile of the student and assessor at 27 months, a difference is illustrated (Figure 27). Within the 'decision-making/teaching' domain the student ranked themselves as having 44% involvement at level three whilst the assessor was more reserved offering only 33% involvement. This significantly differentiates between the clusters. There was also a notable difference in the profile between student and assessor in the adventuring domain, where the assessor identified that the student would be able to undertake most activities (61%) with supervision, whilst the student was more reserved, suggesting that they would not attempt 38% at all. At 33 months the student and assessor perceived the student's involvement quite differently (Figure 28). The student felt they were highly involved, whilst the assessor felt the students' level of involvement was much less and entered a profile typical of the engaged helper. In relation to the profiles again there were differences in perception. The student identified that they could do many activities unaided, but the assessor felt that most activities except for simple doing would need supervision, and the student would be unable to attempt 85% of adventuring activities. In relation to decision making-teaching activities, the assessor felt that 47% would not be attempted at all whilst the student only identified 2% at this level.

Figure 26 CASE STUDY FOUR COMPARISON WITH ACTIVITY DOMAIN MEAN SCORES (dms)

	Simple Doing	Doing/ Communicating	Specific autonomous practice	Decision making	Adventuring
Active Practitioner (Dms)	2.95	2.82	2.64	2.39	1.90
Student 27 months	2.97	2.86	2.55	2.24	1.85
Cautious Practitioner (dms)	2.79	2.53	2.21	1.97	1.57
Assessor 27months	2.90	2.91	2.58	2.35	2.31
Active Practitioner (Dms)	2.95	2.82	2.64	2.39	1.90
Student 33 months	3.00	2.95	2.98	2.55	2.00
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Assessor 33 months	2.70	2.34	2.09	1.49	1.08

Figure 27 CASE STUDY FOUR
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 MONTHS

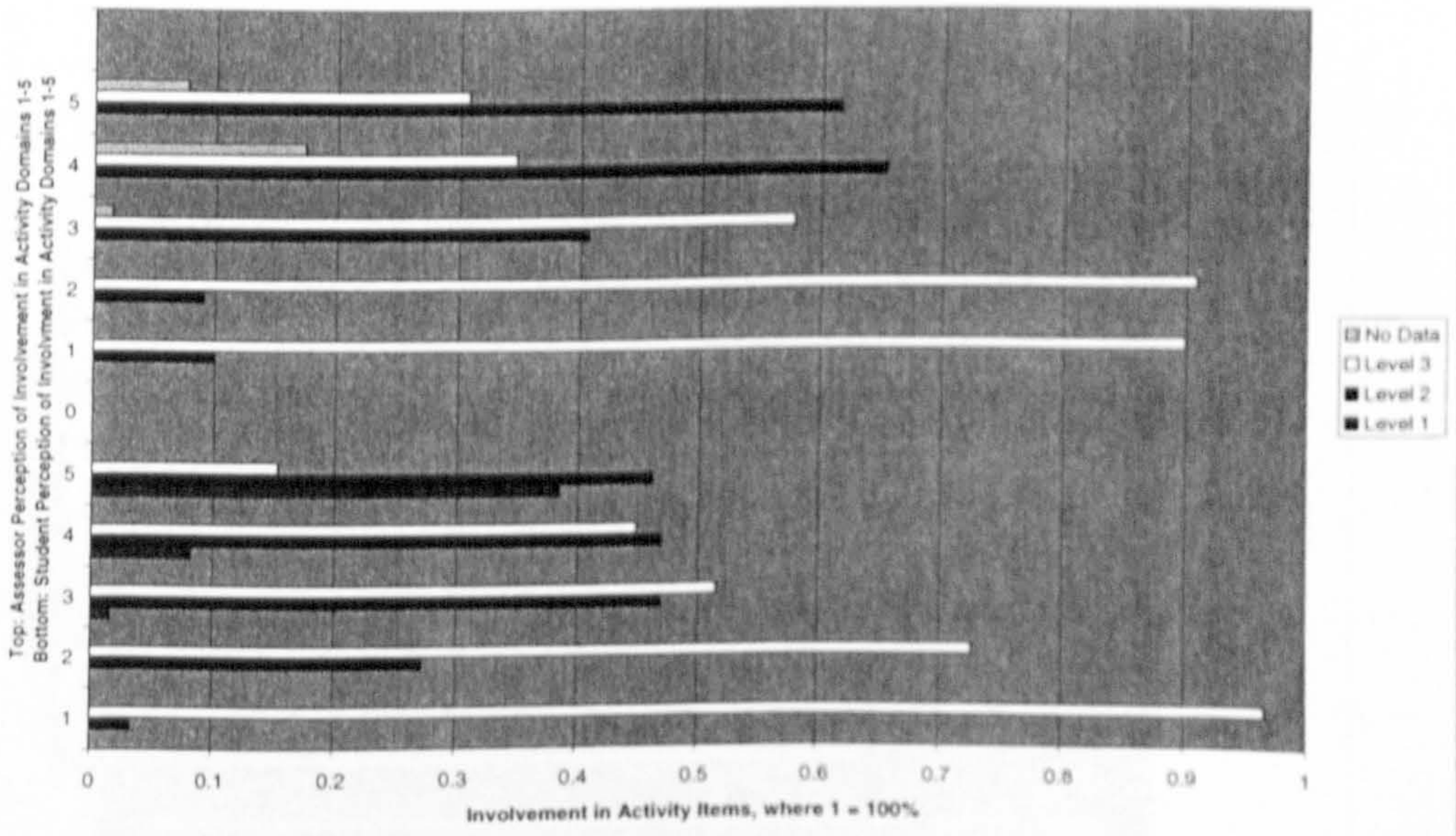


Figure 28 CASE STUDY FOUR
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 33 MONTHS

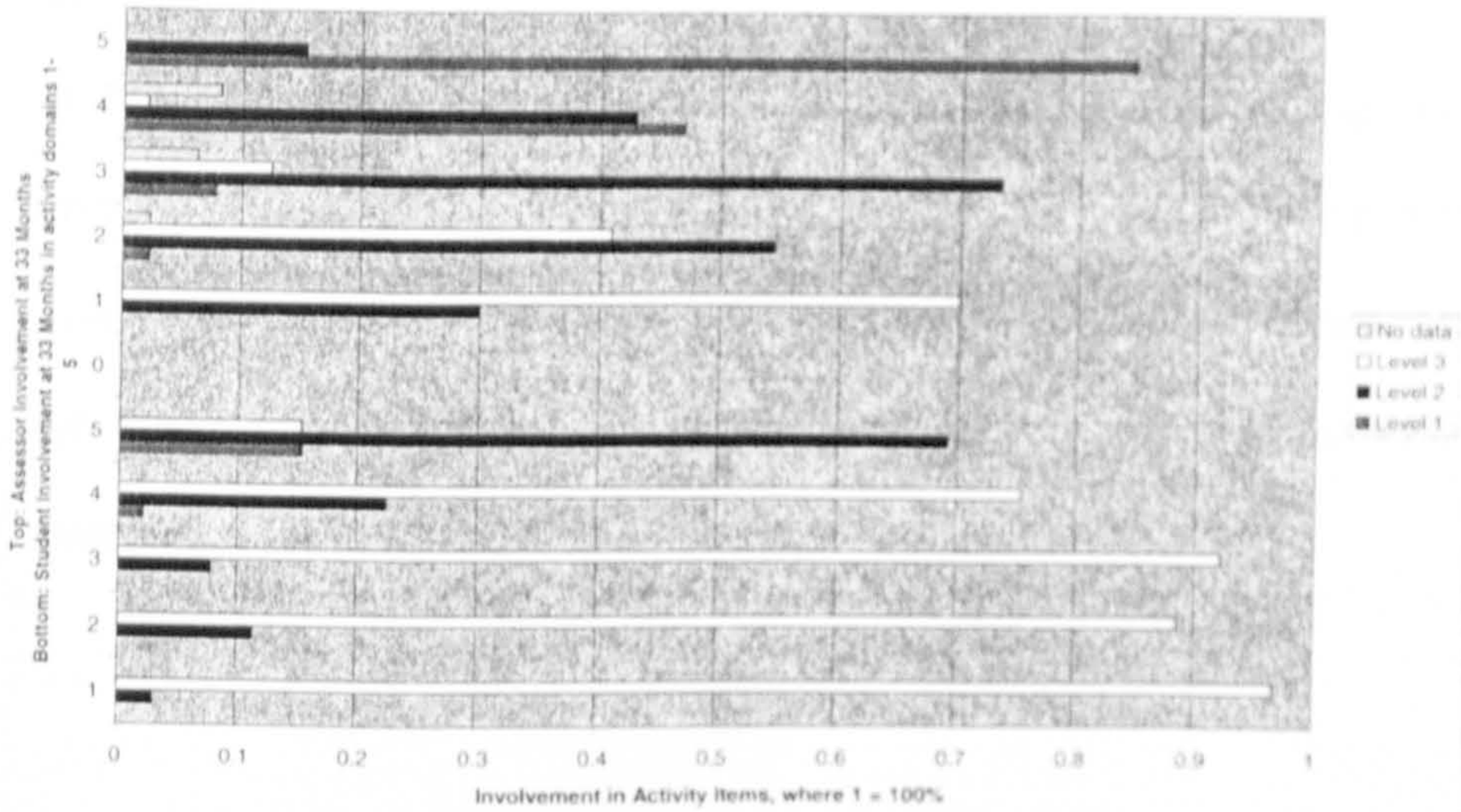
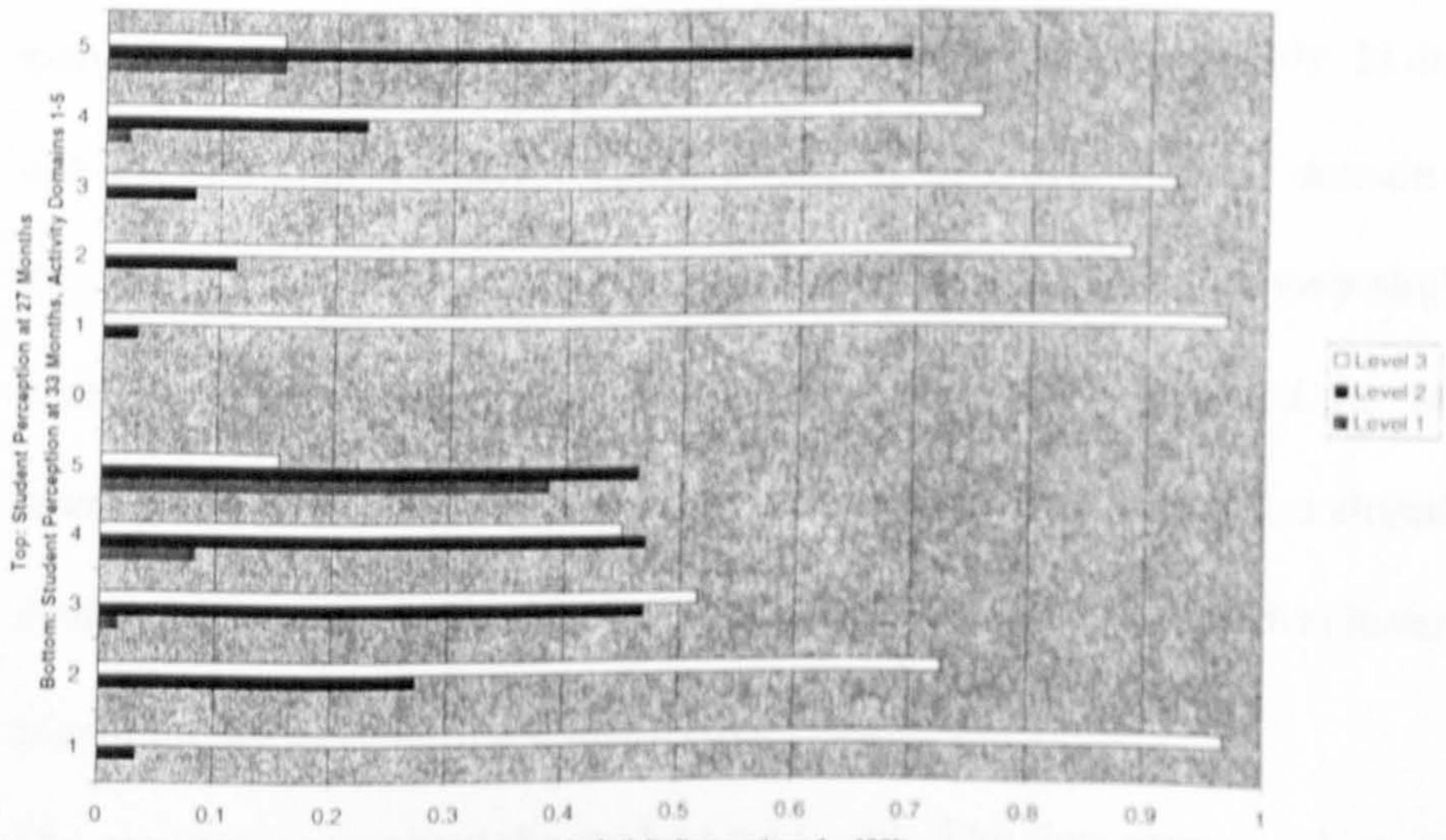


Figure 29 CASE STUDY FOUR
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 AND 33 MONTHS



Comment

In this case the student was very confident and perceived a high rate of involvement on both occasions (Figure 29). They did increase their perception over time. It is notable that this student had previous health care experience and this may have been a factor in their perception. The assessors varied widely in their perceptions and this was concerning.

Case Study Five (ID 33,34,35,36)

This student was undertaking the three year course and completed the assessments at 27 and 33 months into the course. They had no previous health care experience. Initially the student perceived themselves as an engaged helper and in relation to activity domain means for 3,4,5 presented typically (See Figure 30). In domains one and two , they perceived slightly more involvement than the domain mean. Over the six month period the student only appeared to change very slightly in their perceived mean involvement. They were more involved in 'specific autonomous practice' activities and in 'adventuring' activities, but slightly less involved in the remainder. They again followed a pattern close to the cluster mean except for the adventuring domain (See Figure 30).

The assessors' perceived the student similarly. The first assessor clustered into the cautious practice cluster. However, comparison of domain means indicated that the assessor's perception of domains one and two indicate scores lower than the cluster mean whilst the remainder were close to the mean score. When this

was compared with the student scores, the student appeared similar to the assessor in relation to one, three and five (See Figure 31) .

The second assessor assessed the student as being involved as an 'engaged helper', although again rated the student above the mean domain scores in activities related to simple doing, doing communicating and specific autonomous practice. The student and assessor perceptions were close except that the student perceived a greater mean involvement in adventuring activities (See Figure 32).

Comment

When examining the profiles for this student, what was initially evident was the similarity of perception (Figures 31, 32). The student was clear about their perceived ability and on the second occasion, their perception was matched by their assessor. On the first occasion the differences between assessor and students were notable in all domains where the assessor perceived that the student was able to participate more under supervision in activities than they perceived themselves to do. This student demonstrated a low perceived involvement, and had virtually completed their nursing course (See Figure 33). Although this nurse may be qualifying by achieving competence according to the practical and academic criteria for registration, they do not perceive involvement in practice related to medicine administration.

Figure 30 CASE STUDY FIVE COMPARISON WITH ACTIVITY DOMAIN MEAN SCORES (dms)

	Simply Doing	Doing/ Communicating	Specific autonomous practice	Decision making	Adventuring
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Student 27 months	2.87	2.57	2.05	1.69	1.31
Cautious Practitioner (dms)	2.79	2.53	2.21	1.97	1.57
Assessor 27months	2.53	2.32	2.08	1.96	1.62
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Student 33months	2.83	2.43	2.23	1.69	1.62
Engaged Helper (dms)	2.67	2.29	2.02	1.63	1.29
Assessor 33 months	2.80	2.57	2.31	1.71	1.15

Figure 31 CASE STUDY FIVE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 MONTHS

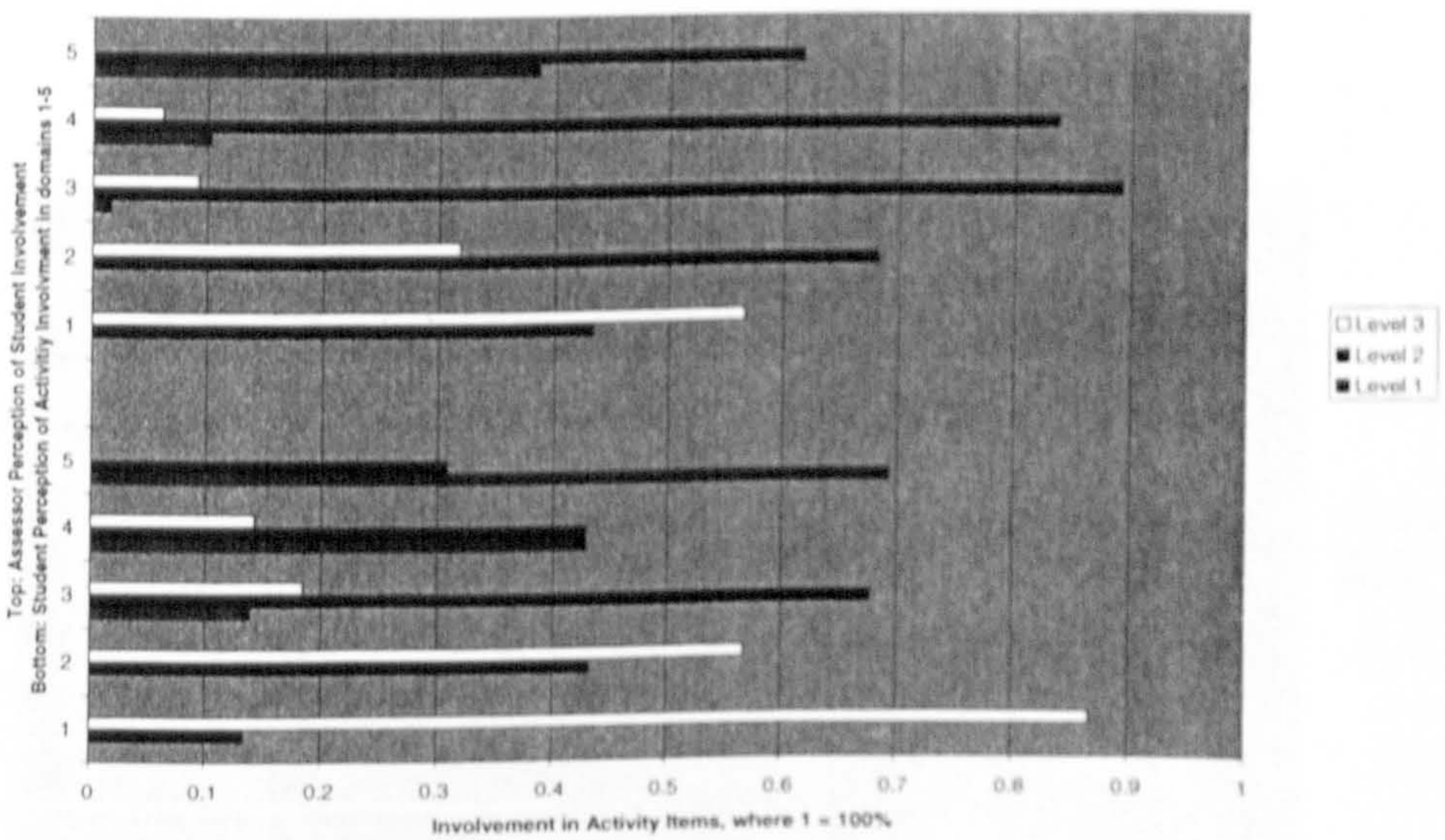


Figure 32 CASE STUDY FIVE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 33 MONTHS

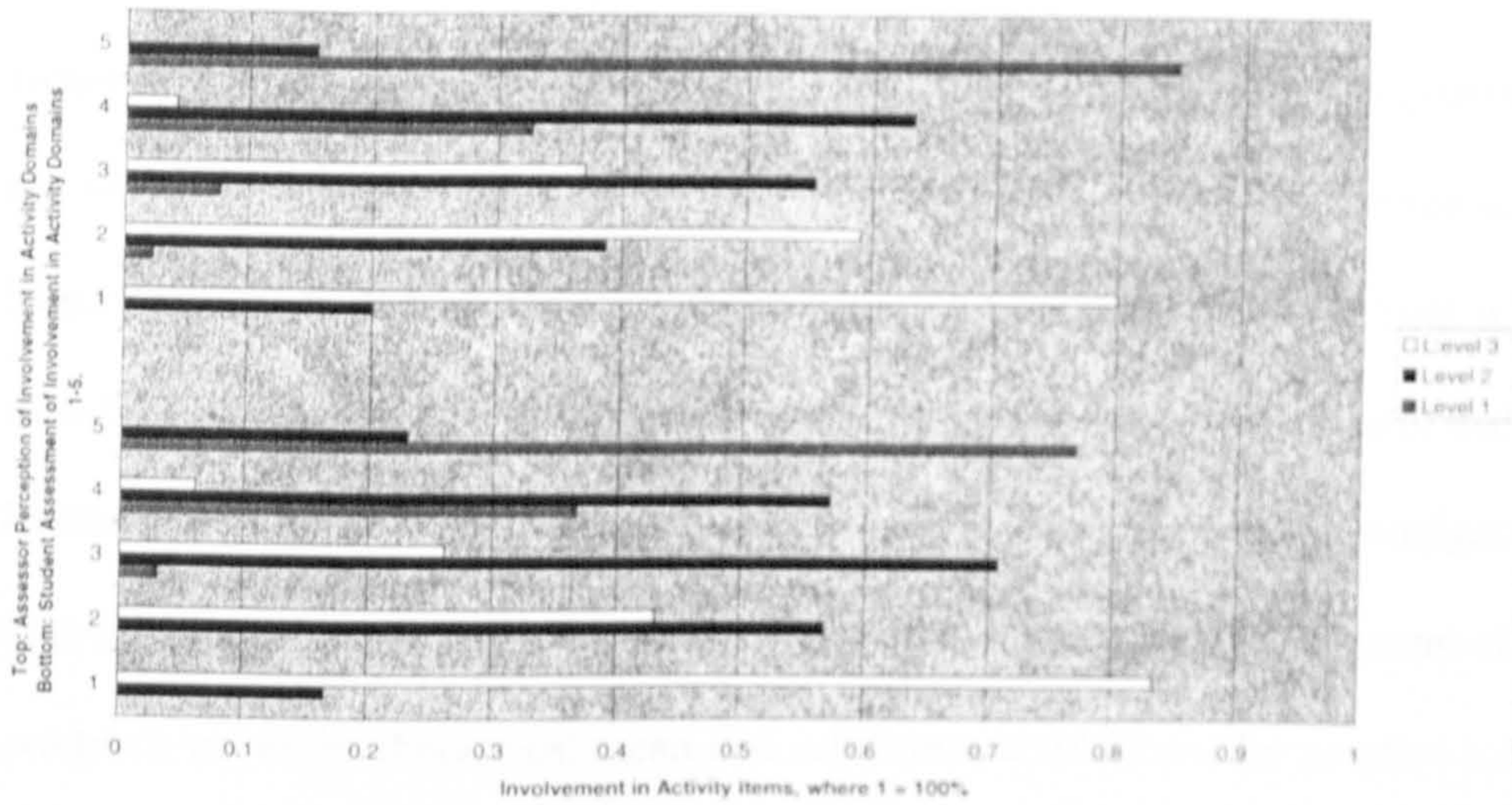
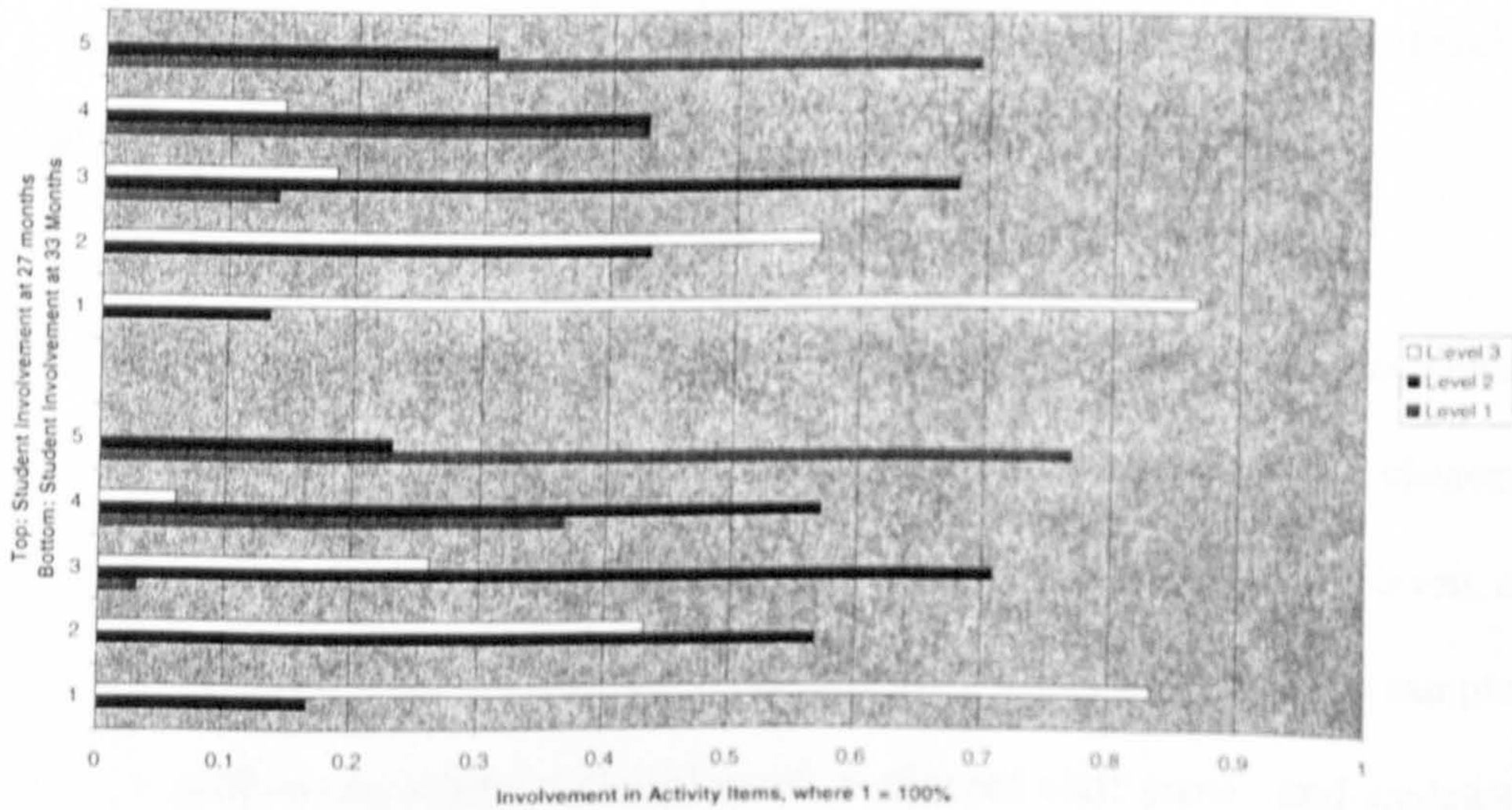


Figure 33 CASE STUDY FIVE
PROFILES OF STUDENT AND ASSESSOR PERCEIVED INVOLVEMENT IN ACTIVITY DOMAINS AT 27 AND 33 MONTHS



11.4 Discussion

Benner (1984) suggested that learners gain practice knowledge incrementally over the period of a course and into registered practice and offered the 'Novice to Expert' model by which their progression may be assessed. By the time of qualification would become they would achieve the third stage of this model that known as 'competent'. Students attending the course of study are acknowledged as progressing towards completion of their course that recognises achievement of academic award by theoretical mean and achievement of fitness for practice by achievement of practice based upon a strategy to meet UKCC requirements for entry to the professional register. This work has concentrated upon the reviewing of student perceptions regarding a third element identified by the UKCC (1999), that of Fitness for Purpose or the ability of the student to achieve their future role in medicine administration practice.

- An initial overview of how students and newly registered nurses perceived their involvement in practice, identified five significantly different clusters of respondents (See Chapter Eight). Within Chapters Ten and Eleven, a narrower band of clusters were identified. This appears related to sample differences, which excluded newly registered staff nurses and students who are not currently included in the child branch part of the course. The resulting consideration has led to a refinement of the groups to pertain to student nurses. This included the inclusion of a further group named the 'active practitioner' group, who demonstrated a lower involvement in activities than the 'independent practitioner' group but a higher

involvement than the 'cautious practitioner' group. In this second sample, the group named passive observer did not appear

Initially, it would appear that the groups seem to reflect similar concerns to those included within the Benner (1984) model. The two first groups (passive observer, observer helper) reflect the notion of the novice, consisting of students in the early part of the course. The second two groups (engaged helper and cautious practitioner) reflect different stages of the advanced beginner, characterised by those in the middle part of the course, whilst the final two groups (active practitioner and independent practitioner) reflect the notion of the competent and then proficient stages of Benner's (1984) model. However, it is important to note that there are not just three groups in pre-registered practice as identified by Benner, but six, thus refining her scale according to this particular aspect of nursing practice. Each is identified as being uniquely different in relation their perceptions of medicine administration, and were found to be different in their profiles relating to the activity domains. The clusters can be ranked, but are significant by their mean scores within the domains rather than this ranking as illustrated in their description and comparisons in Chapters Eight and Eleven.

The passive response cluster is significantly differentiated from all the later ones by their lower responses to all activity domains. Following the increasing involvement It is evident that simple doing and communicating doing activities achieve significantly increased confidence together ($p<0.05$) although the level of involvement in simple doing activities is higher. Engaged Helpers portray a significant increase in doing and communicating activities, but have much lower

involvement within the through the groups. The later groups demonstrate increased confidence in specific autonomous practice and then in decision making teaching skill and adventuring. Independent practitioners show the most involvement of all groups, and they are differentiated by their significantly different responses ($p<0.05$) to all activities except for those involving simple doing activities.

The higher performance in simple doing activities requiring little applied knowledge or skilled practice is relevant to note. It is again supportive of the need for novices to be instructed initially. However, the main feature of interest lies with understanding involvement in activity domains that require higher order skills and knowledge. It is notable that over a quarter of activities were not perceived to be possible without supervision. No cluster identified that they perceived themselves to be independently involved in activities found within the decision making teaching and adventuring domains, even though these were clearly identified within the practice of the newly registered nurse.

A review of the nature of these domains (See Appendix 5) reveals that in some cases (activities including administering of intravenous medicines) were not considered to be part of pre-registration practice. However these only accounted for eleven activities. Other activities related to teaching and managing practice were not included in direct teaching related to medicines in the curriculum but were taught in a general way and expected the students to apply their practice, and some such as the collection of controlled drugs from pharmacy, would have been included early in the students programme within the session on drug storage.

However, the nature of the practice might suggest that the student may not be trusted to participate until later in the course, by which time, the learning may have lost its relevance.

It is finally proposed that some activities would require the learner to have to make quite difficult decisions and apply these, such as deciding whether to repeat a medication if a child vomits it, deciding whether a child needs medication on admission or monitoring the effects of overdose. Even though there is no obvious advancement in the clinical skills learnt or even in the skills and knowledge required for monitoring the patient, these activities involve activities that may evoke feelings.

This evidence suggests that in relation to medicine administration practice there is some need for a rather behaviouristic approach as identified by Eraut (1995) and Benner's (1984) work and indeed is included within the teaching identified in chapter nine. However, later in the students learning these simple rules appear to have achieved their goal, and learners need to be able to participate in learning that both enable the learning of new skills but challenges their ability to make decisions and use teaching.

It was identified within Chapter Two of this work that role function may not be achieved if players were not able to include specific instrumental ability but also expressive behaviours that related to a learners feelings and cognitive learning about the activity (Roy and Andrews (1991). This may be a useful adjunct in considering future learning related to higher order activities.

The Case Studies

The case studies were illuminating in supporting the biographic features already established within this work. The students examined demonstrated progression through the course, although the rates varied. Those who had identified previous health care experience assessed themselves as being more involved than those who were not. In relation to the comparison between students and assessors, the variations between cluster seem to be explicable in relation to involvement in a small number of the domains rather than in them all except in one case (Case Study Four assessment at 33 months). These domains were significant in relation to the cluster membership. Difference in opinion regarding involvement frequently included those activities requiring decision making/teaching and adventuring activities although differences were noted in the specific autonomous practice and doing communicating activities. Most of the simple doing activities were viewed consistently. In all the case studies the first assessors identified the students as being more involved than the second ones did. In these cases the students perceived progression was not necessarily matched by the their assessors.

The greatest strength of the case studies was the ability to look in more detail at how individuals responded, and to consider the relationship between assessor and student perceptions. They have identified in each case possible reasons for different assessments. The significant biographic features are supported in these cases, and the decision making teaching domain is confirmed as an areas where differences frequently occur. The percentage profiles showed that students and their assessors may have different expectations of student involvement and thus

may need more opportunities to communicate about role function in relation to specific activities rather than broad outcomes. A gap between student and assessor perception is evident in relation to level of involvement in at least one of each student assessment examined.

The limitations of the case studies relate to their ability to only describe a small illustrative snap shot. Because of the requirement to maintain anonymity, it was impossible to follow the students up or determine any predictive validity in terms of future success. A further issue that should also be considered relates to the method of selecting this sample. Since only those who returned all the questionnaires were included, this may have targeted those who were particularly motivated. If the students were particularly motivated within their practice also then this may result in assessors perceiving them as more able than they perceive themselves to be. However, whilst a greater number of profiles could have been developed that explored all the student assessor pairings, it is pertinent to suggest that by nature all students returning questionnaires for this study may be more motivated than those who refused consent or failed to respond. It is nevertheless useful to be able to conclude that difference between students and assessors do occur, even if this can only be verified in relation to this small study group.

12 Chapter Twelve Discussion of Findings – The Search for Quality Preparation in Practice in Administering Medicine to Children

12.1 Introduction

This study began by recognising increased error reporting by newly registered nurses who administer medicine to children. Whilst many reasons could be speculated for this observation evidenced by Trust error reports, it is acknowledged that the provision of quality education and support is an essential element in the reduction of the incidence of reported medication error (DOH, 2001). One influence in developing effective practice for newly registered nurses is pre-registration preparation.

The purpose of this research has been to evaluate nurse preparation and practice in administering medicine to children. Through such evaluation, the nature of registered practice and student nurse's perceptions of their developing involvement within it, could be clarified. Ultimately, by comparing these elements with the taught provision offered within one school of nursing, this study has searched for a strategy to enhance preparation for registered practice.

The nature of practice in administering medicine to children however, is complex. Indeed, it is evident that the relationships between preparation for practice, competence and role function are sophisticated. Issues that initially appeared to be relatively straightforward and amenable to investigation have thus raised more questions than this work has been capable of answering. Nonetheless, whilst

recognising the limitations within this study, some interesting and original findings have emerged.

This chapter will focus on two major themes; the way that medicine administration is defined, and the way learners perceive their involvement in practice. Exploration of the research findings in relation to the underpinning literature review has enabled a new and more comprehensive definition to emerge that can help to guide nurses to think about their practice.

The theoretical framework identified in Chapter Two facilitates the discussion in light of the aims and findings of this work. In conclusion a strategy is proposed that may facilitate learning related to administering medicine to children. This is based on a model of adaptation with a focus upon the development of effective role function (Roy and Andrews, 1991), and allows consideration of features that may enhance development of role function in practice, or may act as a barrier to success. The model underpinning the strategy further offers features that are relevant considerations for other aspects of nursing requiring practice-based learning. A contribution to a wider arena of contemporary nursing and health care education can therefore be offered.

12.2 The practice of medicine administration.

In the literature review it was identified that the role of the nurse in administering medicine to children could either be defined as a series of tasks, or as a role within

childrens nursing (Casey et al. 2001; Roy and Andrews, 1991). Further, the way that such practice is perceived by those undertaking it and by those defining it may be different (Magnusson,1981) Indeed, there may also be differences in the way that practice is perceived between student and assessor (Forte, 1998) This led to the proposition that understanding the way individuals perceive activities would facilitate a better definition and communication of practice. This research has demonstrated that medicine administration practice can be demarcated by 201 activities that define it. The activities can be communicated as a recognizable arena of practice between registered nurses. Further, examination of the nature of medicine administration practice identifies a holistic role that is driven by the context of the environment in which it is practiced and yet in some respects can be communicated in a context free way. Differences occur within the care environment, with the development of local innovation and also between local systems and policies (Gallagher, 1999; Latham 2000; Wright et al. 2002; Leape et al. 1995). These findings are supported by similar conclusions drawn in relation to neonatal practice (Ridge and While, (1995) as discussed in Chapter Five), but have not previously been concluded in children's nursing.

The issue of context was identified as being potentially difficult for learners of medicine administration, as the requirements of one practice area may differ from that of another. However, no evidence was found in this work that suggested that either registered nurses or students found the issue of context problematic when they evaluated the activities (See Chapters Five and Eight). Practice activity within medicine administration can therefore be viewed in a way that accepts the existence of context but does not dwell upon it.

It was concluded that a core of activities does describe practice for those undertaking it, although there is interpretation relating to the practitioner's own experience about the nature and content of the activities described (Chapter Five, Illustrative Quotes). However, this means that medicine administration practice cannot be identified simply by the legal requirements that guide it, nor by any kind of instructive checklist, though these are important components. This research cannot offer detail about *how* nurses practice these activities, and further, *why* they do, and this is a limitation. Nonetheless, while it is important to consider any aspect of nursing as greater than the sum of its component parts in the provision of holistic care for children, it must not be assumed that close examination of component parts serves no purpose. Indeed, using the analogy of completing a jigsaw, the complete picture is the intended outcome. Without understanding of the nature and relative position of each component part however, the picture may never be completed. The activities identified through this work were accepted as being part of the practice role of all children's nurses, although the nature of how they might be carried out, and the frequency of nurses involvement varied according to the care setting.

The development of a core description of medicine administration responds to the problems of definition identified by Crown (DOH, 1999). Whilst the Crown Report included a broad glossary to reduce confusion relating to terminology, this work has enabled the nature of activities comprising such terminology to be clarified. Indeed it has also described the parameters of medicine administration practice and identified common core activities.

In order to communicate these core practices, a checklist inventory of activities in medicine administration for children was developed. This also offered a relevant starting point for evaluating student perceptions of their involvement. Even accepting the presence of context within practice, these core activities can be used as a baseline to interpret and communicate individual experience. It is proposed that the inventory offers an empirically grounded tool with greater detail and clearer parameters of practice than previously has been identified within the literature reviewed, (Kee and Hayes, 1993; Ellis, 1995; Dearmun and Whelsh, 1995; Moules and Ramsey, 1998; Hall, 1998; Huband and Trigg, 2000).

Clarity is also essential when the recommendations of 'Medicines Management', (Audit Commission, 2002) are considered. This report has not focussed upon the role of nurses in administering medicine, but has reported more generically about developing a collaborative strategy for medicines management. Although directed primarily at chief pharmacists, the report identifies the multi-disciplinary nature of medicine administration as well as other aspects of medicine management. It recommends increased communication between health professionals and implies a blurring of existing roles as pharmacists take increased responsibility for assessment and education of acute sector patients. Nurses need to be able to contribute to these contemporary developments relating to patient care. In order to do this, they must be comfortable with their own role and able to communicate their practice coherently to other disciplines.

In this research communication of the activities comprising the role of the nurse was simplified by the emergence of eleven broad categories from the initial Staff

Nurse interviews. From these it is evident that nurses view their practice related to medicine administration from a wide perspective. The findings of this work therefore support the findings of Ridge et al. 1995 and Latter et al. 2000; as well as the collated perspective from the discursive literature (Ellis, 1995; Dearmun and Whelsh, 1995; Moules and Ramsey, 1998; Hall, 1998; Huband and Trigg, 2000).

The Importance of the Eleven Categories of Activities in Defining Medicine Administration Practice

The emergence of the eleven categories and the activities found therein, have collated many disparate activities from research evidence and discursive literature (Ridge and While, 1995; Latter et al. 2000; Benner, 1984; Ellis, 1995; Dearmun and Whelsh, 1995; Wong, 1995; Moules and Ramsay, 1998; Huband and Trigg, 2000; Wright et al. 2002).

Nurses assess and plan medicinal treatment throughout a patient journey that may commence before a child is admitted for care and continue until after they are discharged. Knowledge and skills are used to determine patient needs for medicine. Communication is essential between all members of the multi-disciplinary team as well as children and their parents. The nurse needs to be an educator, an advocate, and a practitioner applying many elements of theory concurrently as part of their practice. In treating a range of patients, they need to develop a wide array of theoretical knowledge as well as practical and technical skills. Nurses make decisions, and organize and manage medicinal interventions (See Chapter Five and Appendix Three).

The Concept of Role in Medicine Administration Practice

Review of the literature in Chapter Two revealed that it is important to identify whether medicine administration practice may be considered to be a role in nursing practice or whether it is a collection of mechanistic tasks. Indeed, controversy was established, leading to debate about whether, by definition, it is justifiable to call this area of practice a role or not (Casey et al. 2001; Roy and Andrews, 1991; 1999).

It is however, important to decide whether medicine administration is a role that can subscribe to the philosophical and theoretical principles of role theory (Roy, 1986, Roy and Andrews, 1991; Clifford, 1995). This would allow a new consideration of the nature of preparation for practice to emerge in the form of preparation for role function.

This work has found that medicine administration practice in children's nursing contains activities that are essential in meeting the obligations of a secondary role of nursing (Roy and Andrews, 1991). For example, there is a close relationship between the provision of safe medicinal treatment and the outcome of the patient journey. Activities related to communication between nurses, children and families are fundamental to ensuring effective medicinal treatment, but these activities are also fundamental to nursing sick children effectively.

In Chapter Six it was concluded that medicine administration practices are obligatory to a secondary role in nursing and do meet requirements as tertiary role

(Roy and Andrews, 1991). This acknowledgement also offers a means to illuminate reasons for role failure within medicine administration, and thus suggest that new practitioners may be justifiably reserved about registered practice. For example, if new nurses feel anxiety about their practice role in medicine administration, then the impact of 'getting it wrong' becomes starkly evident when the tertiary role practice is an obligation of nursing itself. Failure to give medicine safely may mean failure to continue a secondary role as a nurse, and all that loss of registration may encompass including loss of earnings, career, and professional reputation and esteem. Moreover, it is not just an issue of 'getting it wrong'. Indeed as a practice role, the way it is performed is reliant upon other factors. The way in which the practitioner is perceived by others to perform will determine their inclusion and position as members of the nursing team (Goffman, 1959).

Whilst impact of role failure is an important recognition, the issue of esteem has been researched previously (Arndt, 1994). A new development of this rather negative conclusion however, can be made by the application of Roy's model (Roy and Andrews, 1991). Accepting these theoretical premises relating to the requirements of role function means that a strategy for assessing and overcoming barriers in practice roles becomes possible.

Firstly though, it is important to consider the requirements of role function in administering medicine to children. Effective role function has two major underlying needs; role clarity and social integrity (Roy and Andrews, 1991). This means that it is essential for players to understand the requirements of the role to

be played the norm and expectations of medicine administration and also to the situation in which the performance may be carried out (Clifford, 1995; Biddle and Thomas, 1966; Magnusson, 1981). Further, practitioner's must also understand the constraints of the role and what preclude's permit's or forces their practice (Biddle and Thomas, 1966). Without such understanding, the player is faced with a weakened system., and error may be inevitable. Equally, if components of medicine administration can be communicated and all players understand the parameters of the role in their context then the system may be strengthened and the inevitability of error reduced.

This work has found that registered nurses are aware of what their practice in administering medicine involves and therefore have achieved role clarity. They are also, by performing in an acceptable manner to their peers, enjoying social integrity. The registered nurses in this work were identifying their practice in a similar way to those included within Benner's (1984) exemplars, as found in Chapter Five. If one takes Biddle and Thomas's (1966) notion of permitting and forcing influences upon developments within practice roles into consideration, however, the registered workforce interviewed must have achieved mastery in their role in order to facilitate and manage practice effectively. In order to administer medicines to children, these registered nurses in this study were operating beyond practice as it is currently defined. The existing definition being limited mainly to the rules and tasks of a practice environment that may preclude innovation (see Chapter Two, p39).

Competence to perform a list of particular activities to prescribed standards is

described as a requirement for registration by the ENB (1993). Such standards are necessarily derived by local education institutions, from the existing evidence relating to medicine administration practice. In Chapter Nine, it was found that the inclusion of taught material within the Diploma in Nursing in the study school mainly focussed upon the legal guidance and policy aspects of practice, and on the rights of medicine administration. When compared with the eleven categories of activities described by children's nurses, there were several omissions. These related to wider elements of the practice role including admission and discharge, organisation and management and communication. Some of these would however, be addressed within the curriculum more generically and the student would be expected to apply common principles (eg. communication).

In light of this research, it is proposed that simply achieving prescribed standards supported by existing literature will not equip learner nurses to comprehend the social integrity of a role in administering medicine as part of their whole practice as a nurse. Students can achieve a role in practice according to the requirements of the course of study that they are undertaking. They can be assessed within practice as meeting criteria that will enable them to be perceived as being competent. Indeed, the learner may be perceived to be undertaking a role in practice that is appropriate and those who are assessing them notice this (Goffman, 1959). Yet such an observation is insufficient for registered practice in medicine administration according to the activities defined within this work, because it only draws attention to a small part of a much greater role that learners must undertake once they are registered.

The evidence supports a need for preceptorship during early registered employment in order that nurses are able to develop their knowledge of practice as they themselves become able to participate within it. For student's, clarifying practice through considering the component activities and identifying the eleven categories of nursing to which medicine administration subscribes may enable them to see an outline map of registered practice. This serves to meet a recognised educational premise that novices need maps. (Benner, 1984; Rolfe et al. 2001). In Roy's (1991) terms, this can facilitate the development of role clarity.

Preparing Learners for Medicine Administration Practice – Issues in Nurse Education.

For the role theorists, failure to understand the completeness of medicine administration practice may lead to a subsequent failure to appreciate the completeness of nurse's responsibility. Since a key component of effective role function is role clarity, role function may thus be a problem (Roy and Andrews, 1991; 1999). However, if one considers the position of educational theory, this difficulty may be attributed to a difference between novice and proficient behaviour (Benner, 1984; Meerabeau, 1992) as the novice is busy trying to learn the obvious 'rules' of their new nursing role.

If the above stance is taken then the need to worry about the parameters of clinical practice is less relevant. The students can learn practice through the constraints of identifying the rules, including the legal aspects and professional aspects (eg. Medicines Act, 1968; Misuse of Drugs Act, 1971; NMC, 2002a; 2002b) the rights of medicine administration (Wink, 1991; Kee and Hayes, 1993; Segatore et al

1993; Hall, 1998) and the simple practical skills identified in the instructive texts (Dearmun and Whelsh, 1995; Wong, 1995; Hall, 1998; Moules and Ramsey, 1998; Huband and Trigg, 2000). Once these are learnt, the remaining aspects in medicine administration may be gained in practice, allowing the student to develop proficient and socially acceptable behaviour.

This has been previously accepted using existing evidence. It is a simple deductive application of known rules and effectively maintains the status quo. In terms of achieving competence as prescribed by broad outcomes this is also simple, since the students are able to declare their understanding of the law as it applies to medicine administration. They can administer a medicine to a child following the rights. This could be considered to be safe practice, which subscribes to the need for broad-based competencies that allow the content and practices inherent to be revealed (Benner, 1984). However, within this model, true success for the student relies on their capacity to visualise areas of practice in medicine administration that have not been comprehensively documented. These areas of practice may not become apparent until practitioners have gained the experience of a registered nurse. Without this vision, the content and practice of the medicine administration role could only be revealed in a limited way. Students would not be able to reveal inherent content and practice comprehensively.

Indeed, this lack of vision is dangerous if considers the impact of the 'multi-system' upon medicine administration practice (Leape et al.1995; DOH, 2000a; DOH, 2001). In medicine administration, simply understanding nursing practice is insufficient to ensure safety. Nurses must be aware of the way that their

practice complements pharmacy and medicine. They must carry out their practice role as a part of this multi-professional system (DOH, 2001; DOH, 2002; Audit Commission, 2002).

In the study School of Nursing, Benner's (1984) skills acquisition model was adopted to enable learners to enable understanding of a holistic nature of practice. However, it is proposed from the evidence discussed above, that the use of broad outcomes may encourage students to learn in a manner that has limited them to achievement of explicit and therefore, known parameters rather than to facilitate exploration of practice roles.

Achievement according to this method would enable learners to become fit for award, because they know defined theoretical components. They also become fit for professional practice as determined by a competency strategy that seeks to observe that students can complete broad operational processes associated with administering a medicine safely in different situations. However, without fully appreciating the complexity of the practice role of medicine administration, it would be difficult to become fit for purpose.

There are a number of ways in which student may be facilitated in their perception of a complete picture of registered nursing practice. Within nurse education achievement may depend upon whether the curriculum actively subscribes to an inductive perspective of social constructivism, or one based on a more deductive behavioural perspective, (Quinn, 2000). It also reasonable to consider the nature of the practice where this is concerned, since some elements clearly lend to

themselves to exploration whilst others are better delivered didactically.

Whatever the philosophy, practice learning has to be effectively facilitated. In the above case it has been suggested that Benner's (1984) philosophical intentions may have encouraged exploration of roles in practice for registered nurses included within her research. However in this study a lack of knowledge of the area to be explored combined with the imposition of learner outcomes for achievement of competence means that understanding a holistic position may be difficult.

A solution must lie in increasing interaction between learners and practitioners about the nature of practice activity. The process of socialisation identified by Eraut et al. (1995) can be used to complement the acquisition of practice competence using Benner's (1984) model. Socialisation is important, and should not be underestimated. However, it must be complimentary to facilitated theoretical and practical learning, in order to allow students to achieve the requirement for qualification through a course of study that ensures overall coherence. Evaluation of the current position of medicine administration education found within this study indicated that child branch students need to explore their perceptions of a registered role in practice and discuss relevant issues.

As a nurse educator, I have used the eleven categories identified in Chapter Five as a guide to ask child branch students about what they perceive should be included within medicine administration practice. Examples identified by the

students are used to highlight the parameters of the role and to discuss their involvement. Aspects they omit are also introduced into the discussion. The aim is to enable students to begin to talk about their practice as they learn and compare their experiences with defined aspects of the registered clinical role. It is anticipated that the presence of a live and continuing dialogue relating to a known picture of medicine administration will aid clarity in the learner's vision of practice and develop their individual social integrity. This is a fundamental requirement for the achievement of roles (Roy and Andrews, 1991). Further, this method begins to place the emphasis of learning about practice with the student, by encouraging them to question and explore their own experiences whilst in practice.

Consideration of the parameters of practice is not restricted to medicine administration even though this is the focus of this study. It is proposed that other aspects of practice based learning may be well served by increasing the opportunity for learners to develop interactive discussion. The development of student-led groups that focus specifically upon discussion about clinical practice skills and roles can offer a means to enhance a culture of exploration and reflection of practice.

12.3 Activities comprising medicine administration practice – Learners perceptions of their involvement.

The UKCC's (1999) Fitness for Practice paper recognised that it is difficult to

define 'Fitness for Purpose' because of the speed of change in the context and content of health care. They even conclude that 'Fitness for Purpose' may be an unreasonable expectation for pre-registration education. However, they also recognise that prospective employers are primarily concerned about fitness for purpose, and in the case of medicine administration practice, where newly registered nurses can administer medicine to children alone, this concern seems justified. Ensuring 'fitness for purpose' in medicine administration is highlighted as a key requirement in maintaining patient (DOH, 2001).

In Chapter Two however, concern about ensuring 'fitness for practice' was examined in relation to learning theory. It was proposed that self-efficacy and locus of control were important features in determining how students' perceive their ability to perform practice roles (Rotter, 1972; Bandura, 1989; Summerfield, 1995). Understanding more about 'fitness for purpose' in administering medicine to children was thus possible through reviewing student's perceptions of their involvement in practice with the role they would be expected to perform once they were registered. A second aim of this work was to evaluate students' perceptions of their involvement in activities comprising the role of the registered nurse in administering medicine to children.

A further aim of this work supported the above evaluation. This was to compare student perceptions of their involvement in activities comprising the role of the registered nurse in administering medicine to children with current provision for preparation offered with one Diploma in Nursing curriculum.

Students were invited to complete questionnaires relating to their perceptions of their involvement in activities normally considered to comprise registered practice. The results clustered into five activity domains, which were significantly different from one another in the way that those undertaking them view them (Chapters Eight and Eleven). These domains were compared with the analysis of taught material identified in Chapter Nine.

Exploration of the activity domains has been a critically important component of this study. This has allowed findings to emerge about medicine administration activities that learners perceive with lower involvement. These findings can also be applied within the existing theoretical framework identified within Chapter Two and this enables consideration of the effect of lowered involvement of these activities upon practice. New knowledge for practice based education is achieved through developinga strategy for enhancing involvement by learners based on these findings.

Two hundred and one (201) activities were grouped by students and newly registered nurses, in a consistent manner , on two occasions (overall consistency of 65.17%, see Chapter Eleven). The activity domains were ranked according to their mean scores. The ranking spread from a domain of high involvement, indicating that respondents performed most activities unaided, to a domain with low involvement where many respondents perceived they were unable to perform the activities. Domains that enjoyed most involvement by all respondents were those that included a high number of activities that required basic practical skills, (those entitled simple doing and communicating doing). Those with lower

involvement included activities that required more mathematical knowledge, pharmacological knowledge as well as advanced practical skill (those entitled decision making/teaching and adventuring). Two further features facilitate the description of the domains and these merit discussion. The first is the influence of knowledge, including practice, pharmacology and mathematics. The second relates more specifically to understanding the nature of activities within each domain.

Mathematical and pharmacological knowledge is of particular concern in achieving effective practice in administering medicine (Ignataviticius and Naumann, 1984; Piric, 1987; Fulton and O'Neill, 1989; Blue, 1989; Ludwig Beymer et al. 1990; Hek, 1994; Trigg and Fox, 1996; Hutton, 1998a; Hutton, 1998b; Hilton, 1999). It is also an influential requirement in perceiving successful involvement in medicine administration. However, learners in this study perceived activity domains that included increased mathematical and pharmacological knowledge with lower involvement. Furthermore, increased perception of involvement was not found to be consistent with the time that the material was taught to learners. Pharmacology and mathematical skills were included in the first part of the Diploma in Nursing (Chapter Nine).

The changing pattern of the inclusion of these activities across the domains when compared with the sample characteristics indicates that these students developed their perceived involvement in activities requiring mathematical and pharmacological concepts late in their course of study in spite of the position that it was taught..

Learners attending vocational courses need to be able to use theoretical knowledge in practice in order to learn it (Eraut, 1995). Since mathematical and pharmacological education was included while students attended placements where they could not apply their skills, the above findings support Eraut's (1995) requirement for placements to be offered so that students may practice skills learnt in theory.. However, educational provision may also be influential in the learners' perceptions. Indeed, an increased in teaching related to calculation of medicines during the second data collection period did concur with a slight increase in involvement in activities requiring mathematical skill. Whatever, if students do not perceive themselves able to be fully involved in practice, it is not realistic to assume that they will achieve success in their registered role. It is therefore reasonable to conclude that theory should be offered at a time when it may be applied. Further, a continuous programme should be designed to facilitate mathematical and pharmaceutical knowledge throughout the Diploma course.

A further feature was also evident in relation to the way students' perceived their involvement, which related to the nature of their involvement in activities defining the practice role. Within existing literature, medicine administration practice is defined in a rather limited way compared to the parameters identified in practice within this work. Those who have defined what nurses actually do, identified activities in an instrumental manner (Roy and Andrews, 1991). Examples include a series of rights that must be completed (Kee and Hayes, 1993; Segatore et al. 1993; Hall, 1998), or some typical practical skills such as the administration of an injection or how to optimise giving syrup to a child (Wong, 1995; Huband and

Trigg, 2000). However, practitioners need cognate knowledge to be able to perform expressive role behaviours as well as instrumental ones (Roy, 1991).

If the role of medicine administration does not subscribe to the requirements of a tertiary role, then it may be acceptable to accept the existing portrayal in the literature that proposes a series of tasks that are instrumental in nature. Acknowledgement of medicine administration as a role in practice however, would mean that activities that require expressive behaviours (those including examination of attitudes and feelings) must also be considered (Roy and Andrews, 1991). Indeed the inventory developed in Chapter Five and Six identified many such activities. Expressive behaviours included taking and interpreting the responses of self and others, responsibility for actions, making decisions, recognising problems and teaching others.

When these activities were clustered by students (Chapters Eight and Ten), all domains included activities that required expressive behaviours. However, it was important to note that the number of expressive activities included within each domain varied. An increasing number was found in the domains where students perceived that they were less involved in practice.

It may be concluded that, within the development of knowledge for practice roles, it is important for both types of behaviour to be addressed, as well as evidence of knowledge relating to skills in professional practice (Roy, 1991; 1999). However, it is important to consider in more detail how these two types of behaviour appear within the activity domains, and discuss the potential impact of the omission of

expressive behaviours within the current literature.

Secondly, the activity domains were differentiated by respondent's level of involvement within them. In determining factors that influence ability to achieve successful medicine administration as a registered nurse, an important finding in this work relates to the illumination of activities that all respondents report lower involvement. In spite of having completed the necessary requirements of the course, and achieving the statements included within Rule 18a, (Statutory Instrument 1983 No 873) respondents reported low involvement in the 'adventuring domain'. Here, respondents perceived that they could not undertake any of the activities unaided. Whilst this domain includes a small number (11) of items (See Appendix 5), and many of these were traditionally viewed as post-registration activities, the activities need to be addressed in relation to developing an effective interface between pre and post registration preparation for practice.

The impact of low involvement becomes of greater concern when the 'adventuring' domain is combined with the 'decision-making teaching' domain. This domain also received comparatively low involvement by respondents (Chapters Eight and Eleven). Together, these include 53 activities out of the total 201 role activities expected of registered nurses. If the students perceive low involvement in this number of activities, then it is reasonable to conclude that they may struggle with achieving an effective role function and self-concept within the registered practice role. This finding is important and must be illuminated for a wider discussion by children's nurses and education providers.

Examination of the domains combined with evidence from the analysis of taught content in Chapter Eleven, showed that those with a perceived low involvement included the following:

- activities that were taught early in the student's study programme but may not have been trusted to use;
- technical and managerial activities such as administration of intravenous medications or restocking of resuscitation medications that were easy to identify within a staff nurses role in practice, but learners would not be expected to perform,
- activities that required mathematical and pharmacological knowledge
- activities that involved complex decision making

Activities identified within the decision making teaching and adventuring domains also demonstrated two further common features. They were either not included in the diploma course curriculum content, or were included within the course in an abstract manner that is not directly related to administering medicines (Chapters Nine and Eleven) thus compromising role clarity. In light of the above evidence, it is recommended that teachers and managers must examine the interface between education and professional practice in clarifying the requirements of pre-registration education. Such education must enable newly registered nurses to be 'fit for purpose'. The activities included within these domains offer an empirical starting point for practitioners and educators to define an agreed 'fitness for purpose'.

One must also consider the issue of social integrity in understanding why students do not become involved from their own perception. In some activities, the respondents identified aspects related to management and teaching, which have already featured within the work on transition (such as teaching peers and managing others), which they are taught within the course. It is reasonable to assume that these activities may sort themselves out within a few months of qualifying (Gerrish, 2000). Other activities require complex decisions to be made. For example, deciding whether a child needs medication on admission or after vomiting, or choosing which medicine to administer, requires both instrumental and expressive behaviours. If the new nurse has not previously recognised this requirement and has no means to resolve their anxiety, then this may cause role dissonance when they must take responsibility within a registered role (Roy and Andrews, 1991).

This explanation contributes to understanding the transition gap already identified within the literature (Jowett, 1995; Luker et al, 1996; Gerrish, 2000) and also the difficulties identified within the trusts where this study commenced. Clearly, understanding the way that students perceive activities is relevant in determining preparation. Indeed, areas that all respondents find particularly difficult can be addressed and strategies proposed for meeting their needs. It is proposed that learners may find difficulty in achieving social integrity within real world practice if they cannot explore feelings and attitudes associated with activities that may challenge their ideology of providing quality practice.

From an educational theoretical perspective, the above conclusion appears as a

simple premise identified within the androgogical principle of allowing the learner to develop and build on what they already know (Knowles, 1990; Ausubel, 1978). Yet it is not quite that simple. It is also important to examine whether students' perceptions may also be borne out of their naivety. It is worthy of comment that aspects raised as being particularly complex by registered staff in the interviews presented in Chapter Five, were related to the management of error and to ethical issues such as advocacy and consent, and the restraint of children who refused medicine. Concerns about these issues are also evident within existing literature (Leape et al. 1995; DOH, 2000). The student sample in this work however, identified that activities related to reporting error, acting as the child's advocate, to consent and to giving medicine to a reluctant child were identified within the doing/communicating domain. This domain has a mean score of 2.3 and a confidence interval to the mean of 2.245-2.510 indicating that most items were perceived by respondents as being able to be performed either unaided or with the support of a supervisor. In Chapter Eleven, significant differences between student responses and their assessors were particularly evident within three activity domains including perceptions of communicating-doing activities. Further, the case profiles illustrated a mismatch between student perceptions and assessed perception of their involvement in practice in this domain in four out of five cases.

It is not possible to define the exact nature of the differences within the complete sample, and the small number of case studies using more detailed analysis only serves to illuminate these findings. However, if a mismatch exists between learner's perception of achieving practice activities in a simple instrumental sense,

and the need of the activity in registered practice to accommodate contextual issues requiring expressive behaviours, then this may act as a barrier to effective role function (Roy 1991). Clearly, this difference is an important quality issue in relation to ensuring that learners are appropriately prepared and assessed for the reality of future practice. It is therefore important to consider why such differences may occur.

Learners and registered nurses are already acknowledged as being at different levels in terms of their performance (Benner,1984; Meerabeau, 1992). This may simply be a case of 'Novice versus Expert' behaviour according to Benner (1984). However, this view has been challenged, and one must consider the utility of such a position (Greenwood and King, 1995). If 'novice to expert' behaviour does exist then it represents an unacceptable transition gap in relation to the safety of children who receive their medicine from 'novices'. It must be the role of the nurse educator to mitigate against it, rather than to accept it, as it is clearly detrimental to student's achievement of their ultimate goal of competence in registered practice.

Thus the conclusion of this work that it is unacceptable to view medicine administration as a rule led, task based practice can be developed further. If medicine administration were simply a series of mechanistic tasks illustrated by a number of instrumental procedures, students would perform their practice well. Most of these activities are included within the simple doing domain and are rated highly by the students. These activities are also prevalent in the taught material students receive in school. However medicine administration practice also has an

expressive nature and includes wider parameters of a role. Developing consideration of this expressive content is more difficult to achieve.

Education must encourage students to explore their feelings and values in medicine administration, and they should be challenged to explore activities that require such expressive behaviours. Issues in relation to practice learning that learners feel unsure about must also be considered. In School this may be achieved within a safe environment. Students can learn instrumental behaviours as well as gain the cognition to achieve expressive ones. This is an important recommendation of this work.

In terms of achieving competence, there is also controversy. Benner's (1984) model of skills acquisition suggests that it may be impossible to move the learner along a set progression and thus change their status as novices, without offering experience over time. Conversely, Roy's (1991) model is supportive of enabling the individual (in this application, the learner), to adapt in order to achieve effective role function.

It is pertinent to question the acceptability of this controversy in relation to medicine administration for children. If Benner's (1984) theory were accepted then responsibility for children's medication treatment should not be undertaken until after the nurses have completed their preceptorship as they would have not have been able to consolidate their practice prior to this. However, if Roy's theory were accepted then preparation should facilitate adaptation to the real practice of the registered nurse in a supported way that allows development of

both appropriate instrumental skills and necessary expressive behaviour. Taking responsibility must be a part of this development. A recommendation of this work must be for health trusts and schools of nursing to explore this position further in relation to the expectations of practice.

Implications for education

The above discussion suggests that knowledge about the component nature of the activity domains is critical. The need to consider expressive behaviour offers an important addition to knowledge for teaching and assessing competence in the practice of medicine administration education. However, within practice learning there also is a need to comprehend and achieve concrete experience before progressing towards a more abstract conceptualisation. (Kolb, 1984; Bruner, 1960 (Barnett, 1994; Rolfe et al.2001). Whilst it has been accepted, this requirement has not previously been explored directly in relation to medicine administration for children. However, these findings support such a requirement. This work has mapped activities according to the way they are perceived by students. This demonstrates that most activities requiring basic nursing practice (concrete experience) are within the 'simple doing' domain, which is associated with the highest perceived involvement. Those requiring more advanced and abstract decision making are identified with lower involvement. The high level of consistency about the way the activities are perceived is important since it supports a pattern of involvement as generic rather than specific to a particular group or cohort of students. Once this is established, the activities comprising the domains become of critical interest in developing student learning.

> *The most important factor in influencing learning is what the student already knows. Ascertain this and teach them accordingly* (Ausubel et al. 1978; p163)

If the above premise were considered in relation to medicine administration practice, then preparation should encourage and assess aspects that respondents are becoming involved in. Students should thus be encouraged to achieve outcomes related firstly to activities in the 'simple doing' domain. These require basic practical skills with which they are likely to perceive early involvement. Assessment of outcomes requiring the application of advanced skills, mathematics and pharmacology knowledge need inclusion that allows for development throughout the study programme to enhance student learning.

The activity domains identified within this work are an important contribution to understanding student development of practice in medicine administration. They offer detail about what may be realistically assessed, and at what point in the students' development. Nonetheless, this must be tempered with consideration about the future of medicine administration practice within the UK. Health Trusts are required to reduce their medicine error rate by 40% by 2005 and health care education is recognised as an important tool in the achievement of success (DOH, 2000; 2001; Audit Commission, 2001). Providing paced and effective teaching for nurses will contribute to this reduction in error rate and the findings of this work indicate how this can be achieved. However, it is not quite so simple. Current DOH guidance suggests that preparation for nurse prescribing should become a pre-registration activity (DOH, 2002). Although caution must be taken with regard to the representativeness of this sample to outside institutions, this

development will require careful consideration about pre-registration prescriber preparation for children's nursing within the study university. This is because involvement in activities requiring mathematical and pharmacological knowledge and advanced practical skill is perceived with low involvement until late in the current course. It is clear within the outline framework of competency in nurse prescribing that this knowledge is essential to achieve the competency to prescribe (National Prescribing Centre, 2001). If this recommendation becomes a requirement, greater emphasis must be placed upon the student's achievement of these skills earlier in their course, in readiness. It is likely that greater time would be required for supported teaching.

12.4 The relationship between learning and a future role in practice.

The final component of this study relates to how learners perceive themselves to be able to function in activities that comprise their future practice role. Once again, this has not previously been questioned specifically in relation to medicine administration practice. There is, however, evidence within wider education and psychology literature to suggest that learner attainment is influenced by socialisation, self perception and locus of control as well as ability (Rotter, 1972; Bandura, 1989; Summerfield, 1995; Eraut et al, 1995). In relation to the calculation of medicines, gender and arguably, previous qualification have also been found to be influential (Pirie, 1987; Kapborg, 1995; Hutton,1998a; Hilton, 1999).

Barriers to effective role function relate to limitations in the performers knowledge and skills, and a perception of expectation by the individual that they are not able to achieve what is asked of them (Roy and Andrews, 1999). Appraisal of the way

that individuals see their ability to practice is thus an important means of determining what elements of medicine administration nurses may find difficult.

The 201 activities identified by the practitioners were refined into a checklist that could assess nurse learners' perceptions of their involvement in medicine administration practices normally associated with the role of the registered nurse. One hundred and thirty one (131) child branch students in one School of Nursing and 15 newly registered nurses were asked to rate their perception of their involvement in these activities.

The way that respondents perceived their practice was significantly influenced by their previous experience, and whether the student's position on the course meant they had any practice within a child health care setting. Previous qualifications were not significant in affecting the students' perceptions. This work therefore can offer no evidence to support previous findings that previous attainment influences future attainment as proposed by Summerfield (1995) and Kapborg (1995). However, it is evident that factors other than ability as measured by previous qualification do influence student perceptions of their involvement in practice. The finding that past registered practice changed learners' perceptions significantly supports the proposal that influence over life paths can be exerted by the selection of the environment. Learner nurses who have had the benefit of performing a role in practice albeit in a different environment, perceived themselves as able to exert some control over their practice. This also supports the need for socialisation within practice roles identified by Eraut et al. (1995). Indeed, if they have role clarity as identified above, these learners may not require

so much guidance before they perceive themselves as being involved.

Indeed, when considering willingness to become involved, Benner (1984) identified the notion that novices needed to be observers of practice. She included this category in her model in identifying the beginning nurse. Hancock (1994) however, criticised Benner, stating that this notion of observing was interpreted too literally by students. In Hancock's study, practice based assessors reported that the students failed to become practically involved whilst in placement.

In this work, the presence of a cluster of students who self-reported their involvement in medicine administration to children in a passive way suggests that simply taking away their right to be passive in their outcomes may not prevent them from being passively involved in practice. Benner's (1984) Novice to Expert model is therefore supported in the way students perceive they can practice, especially if they have no previous practical involvement. Further support is gained when one examines the 'passive observer' cluster in relation to the differences between them and the other clusters in Chapter Eight. The passive observers demonstrate significantly lower involvement in the domains that included 'simple doing' activities and those requiring 'doing/communicating' activities.

In light of this evidence, the recommendation of this work must be to facilitate the students to develop instrumental and expressive behaviours. These should be related to 'simple doing' activities and activities that require 'communicating and doing' in medicine administration early in their course of study, in order to

encourage involvement in the practice setting. Further, although the characteristics of the 'observer/helper' cluster show only a little more practice experience than those in the 'passive observer' cluster (Chapter Eight). They demonstrated significant differences in the activity domains relating to both simple doing activities and doing communicating activities. These domains are already found to include a high proportion of basic practical skills, and skills that require the learner to communicate with their patients in making simple assessments. That such a small amount of practice may make a difference to students' perceptions supports the proposal of Eraut et al. (1995), acknowledged within 'Fitness for Practice' (UKCC, 1999) that early opportunity to observe practice, makes a difference to students' perceived ability to be personally involved.

Within the remaining clusters, the changes are also relevant. Within the first data collection, a sample was used that reflected the views of a wide range of students from new entrants to staff nurses who had been registered for up to three months. In this analysis, the three highest scoring clusters showed differences in confidence in relation to all domains and were significantly differentiated by their involvement in all domains except simple doing activities. 'Simple doing' activities are mastered early and students remain involved in them. With the other activity domains, involvement increases. However, the spread of respondent experience indicates that each cluster contains a wider range of respondents than the second data set. As a relationship between responses and progress through the course has been established, (Chapter Eleven) differences between the middle groups are more likely to be accentuated within the second sample, whilst the first

sample determines the paramcters of rcsponsc.

The activity domains that differentiatcd clustcrs most consistcntly arc thosc requiring 'doing/communicating' activitics and 'dccision making/tcaching' activities. These domains are also responsiblc for differcntiation bctwccn thc clustering of students and the observations of thcir staff assessors (Chaptcr Eleven).

Implications for Education

'Building a Safer NHS' (DOH, 2001 p3) idcntificd that; "...rccognising that it is weak systems that create the conditions for; and thc incvitability of crror is vital to achieving higher levels of patient safcty". Thc cvidcncc discussed abovc supports a need to develop a strong systcm through simplc, carly involvcmcnt in practice with guidance to enable the lcarncr to dctcrminc a clear picturc of their role. Allowance should be made to enable the lcarncr to obscrvc and then practice simple practical skills and then begin to cmbcllish thcir skills adding cognitive knowledge and understanding of morc advanccd practicc. It is important to consider whether learners can learn any 'faster' than they do, and this has implications for assessment.

If adult learning involves enabling lcarncrs to build upon what they know, (Ausubel et al. 1978) then it is rcasonablc to conclude that practicc competcncc must consider this criteria in order to be effcctivc. Mcdicinc administration education should be dctcrmincd in a realistic way, which supports and encourages the development of knowlcdgc, as lcarncrs pcrccivc it.

However, in achieving the competency requirements of professional registration upon qualification (NMC, 2002) and safe practice demanded by the DOH (2000), learners must achieve rights and rules that must be seen to be carried out effectively. Taking this perspective into account, the technical rationality perspective of a context free acquisition of skills to be assessed (Mansfield and Matthews, 1985; Jessop, 1991; Storey et al. 1995) initially appears be the best path to ensure an outcome of a safe practitioner. But it is pertinent to question whether safety is sufficient to establish a safe system of working. If one considers the findings related to learners perceptions of their learning related to medicine administration, and takes into account the nature of the activities that they have to learn, the above solution effectively denies the existence of many expressive elements of the role. In light of the findings of this work, the achievement of technical competence in instrumental activities would appear consistent with novice learning and may be an effective means of determining 'simple doing' activities, attained by students early in their study programmes. However, this work also identifies that students later develop their involvement in activities that require them to achieve more than technical competence to achieve instrumental skills. It is highly important therefore, that students' develop an individual construction of medicine administration and understand the challenges to such a role in practice, to ensure effective role function.

Practice competence in medicine administration is something that incorporates both instrumental and expressive behaviours. This work therefore concludes that assessment schemes need to accommodate learners' needs to be both technically able but also able to articulate their attitudes and feelings in relation to decision

making in medicine administration in order to achieve an outcome of competent practice that includes 'fitness for purpose'.

12.5 Conclusion - A strategy for enhancing medicine administration preparation for children's nurses

The Roy model (Roy, 1972; Roy, 1984; Roy and Andrews, 1991; Roy and Andrews, 1999) was initially adopted within this work as a means to operationally define concepts in relation to role. As a model that has been primarily designed for nursing patients, it was never intended that it should be included in any greater sense. Although Roy has previously been used effectively in guiding research methodology (Meleis, 1997; Phillips, 2002), this was effectively identified from existing evidence within the framework for enquiry and subsequently examined within the literature review. Nonetheless, Roy's (1991; 1999) construction of role function within her theory of adaptation has emerged through this work as a comprehensive means of interpreting and applying the evidence yielded by this study.

Roy offers this work a means to view the data in relation to the student, and as more than a sum of its parts. It allows a holistic perspective. Through application of this model, a new strategy for preparing students to administer medicines can be developed. Further, the model may have a wider application. In order to fulfil a secondary role of nursing, nurses must participate in many tertiary roles and learners have to learn these also. The benefit of this work to a wider audience thus

becomes apparent. If this model can be usefully applied in considering how to offer effective practice education in medicine administration, it may also have a beneficial application within other tertiary nursing roles. Even if these roles are not clearly identified within the literature as suggested by Clifford (1995b), Roy's model may offer factors for consideration by teachers involved in the development of practice education.

However, there are weaknesses. Although Roy's model was initially designed as an underpinning curriculum model, its emphasis has been related to patient care in a North American care setting. The theoretical assumptions associated with the model have been researched extensively as has its utility in caring for patients (Phillips, 2002). However, it has not been extensively tested in the UK, nor in relation to its application to student nurses as the focus of the 'care'. Indeed, although the use of the model is well accepted within education internationally as a mean of curriculum development, there is little research evidence to support or reject the use of the model in a more specifically focussed manner (Meleis, 1997; Phillips, 2002). The benefit of this model for this work however, relates to it utlility in focussing upon the developing role of the learner and newly qualifying nurse. This is enhanced by Roy's (1999) developing emphasis upon individual perception, in ensuring healthy adaptation.

Of course, it is not reasonable to adopt Roy without recourse to any other stance. Benner's (1984) model suggests that competence may be achieved by the determination of competency within a broad range of care domains. This was useful at the time of publication of her work because it enabled the holistic nature

of caring to be considered. For the school of nursing in this study, it offered a framework that enabled a move away from the academic achievement of objectives governed by four intermittent assessments (GNC, 1969). However, in spite of the intentions of the Benner's model (1984), this work has found that the broad-based approach has continued to encourage students to learn medicine administration practice according to a minimal set of rules. Students then qualify for registration without having any formal assessment of specific aspects of medicine administration practice that they may feel unsure about. The earlier approach of using four intermittent assessments may have been no better since again this was a rule driven approach that simply expected students to meet externally ascribed criteria rather than consider their ability to function within a practice role.

According to the findings of this research, involvement in administering medicine to children is influenced by individual experience. Facilitating practice learning therefore needs to consider both internal factors as well as external ones. Students do appear able to demonstrate competence to their assessors, and yet do not perceive themselves to be fully involved in activities related to medicine administration. This is evident as student and assessor perceptions were significantly different (Chapter Eleven).

If one changes the perspective slightly, it is also possible to conclude that clinical nurses may assess students as competent to administer medicine but then later legitimately identify them as unable to practice their role as a registered nurse within practice. It is proposed that this may be because there are different

elements of the role. Some elements, which are already documented and highly visible, are likely to be assessed by nurses within the parameters of the existing evidence in practice. These include the rights and the instrumental practice elements (Wink, 1991; Kee and Hayes, 1993; Segatore et al. 1993; Downie et al. 1995; Hall, 1998). It is these areas that are identified by student nurses' as being more able to be fully involved. They are thus likely to be identified as competent. However, there are other elements within the practice role that are less visible but nonetheless remain important is determining competence. These have been found in this work to include activities that may be described as 'expressive. They include 'decision/making teaching' activities and those that advanced practice skills not usually associated with the work of the student nurse.

Returning to the beginning of this study, there was initial concern that students could be assessed as being competent but then as newly registered nurses they were unable to achieve practice effectively. Given current knowledge surrounding medicine administration for children is mainly instrumental in nature, and there is a lack of previous evidence about the complete role in practice, this is not only quite possible but actually unsurprising. It is essential that those preparing nurses for administration of medicine to children enable the consideration of these expressive activities but also engage with practice in dialogue with the intention of ensuring a smooth transition between the student and registered role.

The Application of Roy's Model

In the curriculum undertaken by the study sample in this research (UKCC, 1986), the use of Roy's theory may have been difficult to implement. Early

practice was limited and the competencies identified within Rule 18a led to a focus upon factors influencing client health and illness rather than nursing care delivery (UKCC, 1986; Gilling, 1989; UKCC, 1999). However, changes to nursing programmes have incorporated early practice and altered their focus to address national outcome based competency domains. These domains include care delivery and management as well as professional and ethical practice and personal and professional development (UKCC, 1999; DOH, 1999). As such, they are more focussed upon the learner and the nursing relationship that they develop with their clients. With the adoption of a new curriculum that recognises a need to achieve measurable outcomes but also actively promotes student self-learning, it is timely to consider other models for facilitating nurse education.

However, such a consideration is complex. Teaching plans must take account of the curriculum, and content must be situated accordingly. Teachers already have learning theories and models to justify broad principles underlying methods of facilitating learning (Quinn, 2000). These methods enable the possibility for academic and practical goals to be achieved as discussed in the literature review. However, the models reviewed do not consider influences upon learner's role function in their future practice.

When Roy's (1999) model is combined the evidence from this work, a new strategy for practice education can be offered as an exemplar. In this strategy, the learner nurse is central to the model. They are seen as striving to achieve role function within a secondary role of nursing. This requires achievement of tertiary

roles in practice such as medicine administration (See Figure 34).

Roy (1991) defines the achievement of a tertiary role as an instrumental part of striving for secondary role transition. In this work that would mean that achieving success in administering medicine to children is essential in achieving transition from being a student to becoming a nurse. Capacity to achieve role mastery is essential also in remaining a nurse once registered. Failure to conform to pre-established criteria accorded to a role in medicine administration would render the nurse in breach of the many regulations previously identified in Chapter Two, and thus risk loss of professional registration and employment. Secondary roles (of which nursing is one), are identified as being achieved positions that are acquired and mastered over a period of time. They are a means of supporting primary roles and thus are not readily relinquished (Andrews, 1991). However, they are also identified as the most likely type of role to suffer from problems of role function. If applied to those who make medication errors, it is the expectation of the achievement of a tertiary role associated with the secondary role that has been challenged, and this perception of failure may result in loss of esteem (Arndt, 1994; Booth, 1994).

To be successful therefore, students must understand the requirements of appropriate role function. Roy (1984) has adapted these from Parsons and Shils (1951)'partitions'. They include knowing the consumer, understanding the rewards, having awareness of access to support, and facilities to achieve effective

role function and agreeing an appropriate collaboration for success (Andrews, 1991).

For medicine administration practice, the consumer could be viewed as the child, for whom an ineffective instrumental role function by the practitioner would lead to potential fatality. However, in medicine administration education, the consumer would be the student themselves, who are required to achieve a successful outcome in order to qualify to become a nurse. Illuminating these requirements as well as facilitating understanding of relationships between focal (specific), contextual (related) and residual (background) knowledge enables the opportunity to encourage the student's social integrity within their practice role. Further, it allows them to challenge potential barriers established between theory and practice. It is important to assess why role might not be achieved, as such recognition leads to the learner developing strategies to adapt to their situation. Roy (1991; 1999) offers her perspective by proposing several factors associated with effective role function. These are helpful when developing a strategy for enhancing practice education. They include:

- Ineffective Role Transition – influenced by stimuli that affect the role taking process including; general determinants (in this work found to be past experience and position in the course of study). Social setting, cognator processes and resources are also important, as is, the knowledge that an individual has, and their capacity to use that knowledge effectively in achieving the practice role. Social Perception or the learners ability to judge their situation and others within it.

- Role Distance – The role is incompatible with the individual's self-concept. The individual thus avoids the part of the role that makes them uncomfortable. In this study, a potential example relating to patient restraint is offered by a registered nurse within the illustrative quotes (Chapter Five)

- Role Conflict - This can be intra-role conflict or inter-role conflict. The learner finds that the expectations of the role differ from their expectations. An example in this work relates to the comparision between the taught material and the actual role in practice. They may further be occupying roles that are in competition and are torn between the two.

- Role Failure – The individual chooses not to assume the role. In medicine administration this is illustrated when recalling that the effect of error on some nurses esteem was sufficient to prevent them from wanting to undertake the role at all (Arndt, 1994).

- Out-group Stereotyping - The individual does not feel a part of the group undertaking the role. They perceive themselves differently. Again, the above example may be used if the individual feels that they are seen as a liability rather than a competent practitioner.

These factors must be considered when planning practice sessions. Time must be allowed for consideration of the possibilities of ineffective transition. It is proposed that this may be achieved with learner nurses by including time for

discussion related their achievement of practice roles. This would fall within a review of expressive components. If these findings are applied a strategy that is centrally focussed upon the learner emerges. This is presented in Figure 34 and the practical application is discussed.

The way that the learner may adapt to ensure effective performance in their role is dependent upon their ability to perceive clear parameters of their practice and to gain social integrity. Preparation must offer the opportunity for the learner nurse to achieve these fundamental criteria, and competence in practice relies upon assessment that takes account of them. Within medicine administration specifically, the eleven categories and the activities incorporated within each, can be used as starting point for discussion and clarification of the practice role. Allowing the learner nurse opportunities to observe and practice will further support their development of role clarity, as long as they are allowed opportunity to continue a dialogue of their experiences.

The learner's ability to develop social integrity with the practice role also affects their role function. This requires the incorporation of instrumental and expressive behaviours and these are influenced by context. In medicine administration, this includes knowledge of mathematics and pharmacology and also a range of practical skills. This work has found that learners mostly perceive ability to become involved in activities requiring instrumental behaviours before they

became involved in those requiring expressive ones. This is supported by existing educational theory in a wider sense as already discussed in this chapter.

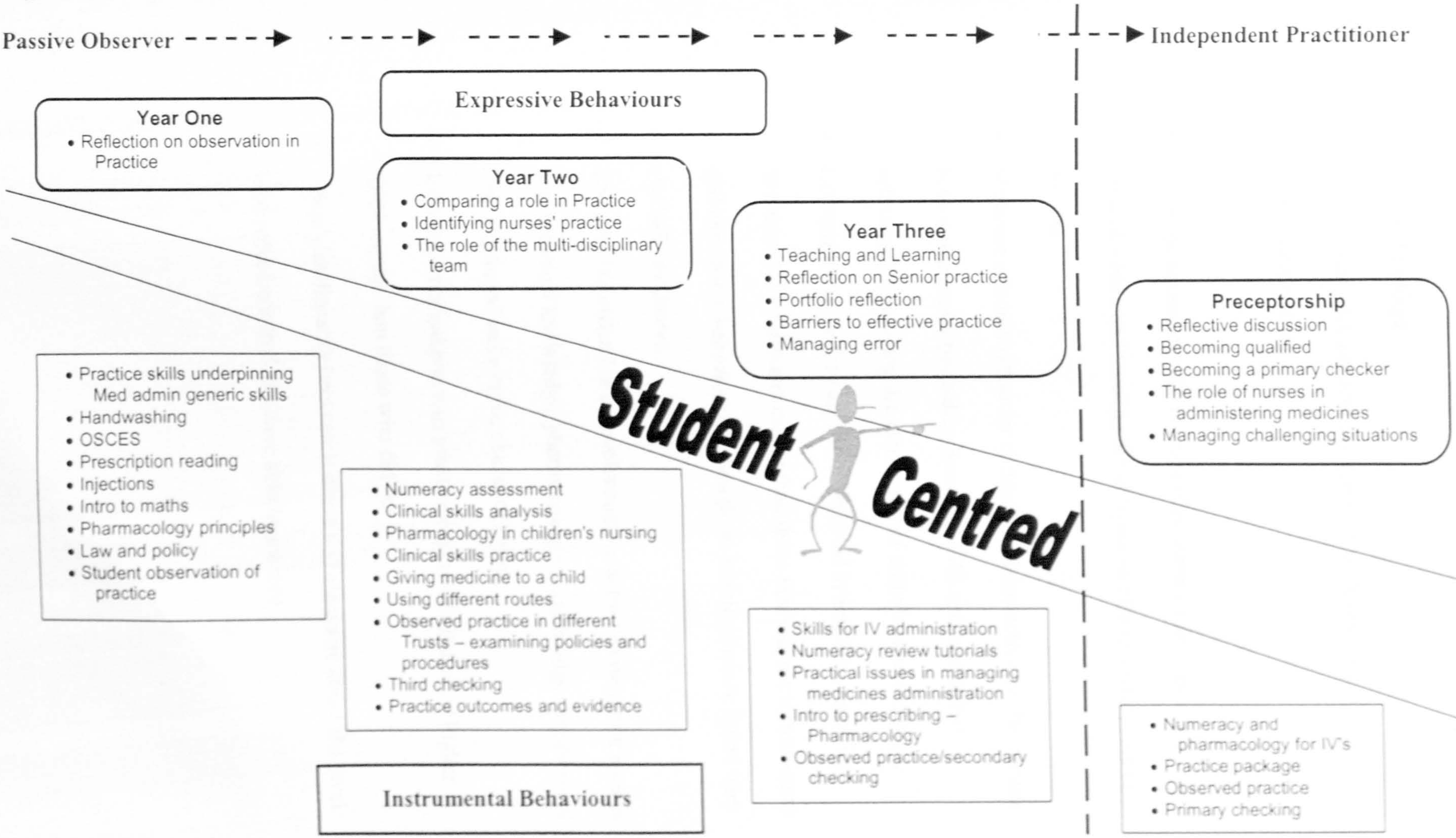
The contexts that influence medicine administration practice may relate to the residual expectations that the learners has about their perception of contributing to an organisational goal of children's nursing and their beliefs about what quality should mean in professional terms. Examples include the wider challenges of administering unlicenced medicines, and professional concerns relating to the restraint of children.

The local environment, including the impact of local policies and codes of conduct, as well as resources available further influences practice behaviour. For example, nurses make decisions about discharging patients, but may not be able to carry out their intended behaviour until pharmacy have dispensed medicine to take out. If this resource continues to be unavailable and the patients become impatient, then the nurse must adapt their care to accommodate this situation.

Internal perception or self-concept also influences the way that a learner perceives involvement in medicine administration practice. Influencing factors identified by this work were included experience and position within the course of study. These are critical to this work, as negative self-concept can create barriers to effective practice.

In summary, consideration of the evidence that would specifically apply within the preparation of nurses for practice in administering medicine to children is helpful.

Figure 34 A STRATEGY FOR DELIVERING MEDICINE ADMINISTRATION EDUCATION



12.6 Summary of Findings

The following findings were particularly relevant in developing a strategy for enhancing practice preparation:

- Medicine administration is a complex tertiary role in practice situated within and meeting the obligations of a secondary role in nursing.
- Medicine administration for children contains activities that require both instrumental (including practical skill) and expressive behaviours (including the expression of attitudes and feelings).
- Learners perceive they are more involved in activities requiring instrumental behaviours earlier than those that include instrumental and expressive behaviours, although no activity domain found was mutually exclusive.
- Learners identified lower involvement in activities requiring applied mathematical knowledge, pharmacological knowledge despite them being included early in the course of study.
- Learners who had previous practice experience indicated higher involvement than those who did not.
- There was disparity between learners and assessors about the level of involvement students were able to achieve.

Summary of Findings In Relation To The Aims Of The Study

1) Activities that comprise the role of the registered nurse in administering medicine to children.

The work of nurses in administering medicine to children is complex but can be described by the activities that comprise it. In this work this included 201 activities that were identified by registered practitioners, from seven different health trusts. An expert panel of nurse managers, educators and nursing students agreed the activities. The activities have limitations associated with their external validity to other areas of children's nursing including community nursing. Nonetheless, they were agreed as a reliable indicator of nursing work across a range of children's nursing specialities. Indeed, they are also consistent with a collation of literature and some previous research. The activities indicate the nature of a role in medicine administration, and as such this work has achieved the first aim. However, it was recognised that a role in practice is likely to be more complex and subjective than the activities that comprises it. This raises questions about what we can know about individual experiences of role. It highlights a need to apply a model of education that can enable students to explore the complexities of practice roles.

The 201 activities are practically helpful as a means of communicating medicine administration practice and offer a new and more comprehensive perspective on contemporary practice to nursing and nurse education.

2) The relationship between activities comprising the role of the registered nurse and student perceptions their involvement in administering medicine

Students perceived their involvement in medicine administration practice differently according to their position within the course they were undertaking, with those having had practice experience perceiving greater involvement than those who have not. Previous employment experience within a health care setting also facilitated a perception of greater involvement. This supports a need for early clinical practice.

A few students, at the commencement of the course of study, were found to perceive themselves as having very little involvement in practice. They were unwilling to participate in most activities even under supervision. Students became progressively more involved in activities across domains that required increasing requirements for mathematical, pharmacological and practical/technological knowledge, until they registered.

At qualification, all students identified two domains with lower involvement. These domains were entitled 'decision making/teaching' and 'adventuring', because of the nature of the activities included within them. Combined, these activity domains contribute a more than a quarter of activities comprising the registered role in practice. Identification of this disparity between the perception of the learner and their future role in practice is an important finding within this work. Knowledge about the nature of these activities suggests that many are

associated with expressive rather than instrumental behaviours (Roy and Andrews, 1991).

3) The relationship between activities comprising role of registered nurses in practice and provision for preparation within one Diploma in Nursing curriculum.

4) The relationship between student perceptions of their involvement in activities comprising the role of registered nurse in administering medicine to children and their preparation in one School of Nursing.

The inconsistency between practice as it is directly taught within the curriculum and the content as it is identified within practice observed by Eraut (1995) is upheld. Analysis of the curriculum demonstrated that activities with higher involvement rated by students were mostly focussed upon. These were activities that were found within the 'simple doing', 'doing/communicating' and 'specific autonomous practice' domains. Content requiring the learners to make decisions and teach was not included directly in relation to medicine administration even though they were a part of the newly registered nurse's role. The taught programme mirrors existing literature about practice in medicine administration.

5) To propose a strategy for preparation that enhances role function for nurses in administering medicine to children.

This has been discussed above. The application of Roy's (1991; 1999) model offers a method that may have relevance beyond the development of medicine

administration practice. Further research is now required that examines the applicability of this model in teaching other areas of nursing practice that subscribe to Roy (1991) requirements for a tertiary role.

12.7 Strengths and Limitations of this Work

This work set out to evaluate nurse preparation and practice in administering medicine to children, in order to determine the nature of a contemporary registered role and to describe student nurse's perceptions of their developing involvement in role activities. The ultimate purpose was to search for a strategy that would enhance preparation for registered practice. This culminated in the five aims established within Chapter One. It is important to review whether these aims have been achieved and reflect upon the strengths and weaknesses of this research as a means to offer direction for future development.

The major strength of this work lies with the application that it has been able to enjoy within the child branch at this university throughout the seven years that it has been undertaken. This is, in part, due to the willingness of practice and academic colleagues to consider findings seriously, include them in discussion and act practically in light of this study. For this I am indebted.

During the study period, the evidence found and the associated literature has been used in the following ways;

- To advise and develop provision for remedial support for Pre-registration Diploma and Degree Students in relation to calculation of medicine doses.

- To tailor the nature of taught content within the child branch realistically within the parameters and nature of the nurse role in practice.

- To use students' perceptions of their involvement in the development of achievable practice outcomes. Outcomes requiring demonstration of competency in relation to maths and pharmacology now arise later in the study programmes than previously, whilst emphasis upon development of clinical practice skill is placed earlier. These findings coincide with national decisions arising from Making a Difference (DOH, 1999) and Fitness for Practice (UKCC, 1999).

- To use the 53 activities identified by respondents as having lower involvement as a starting point for discussion between trust managers and education staff. Tackling these activities specifically is seen as one way of ensuring a smooth transition between pre-registration and registered practice. A programme of study is being developed that bridges this critical transition period.

- To continue to recognise the importance of evaluating the relationship between clinical practice and education in facilitating practice learning.

External Validity

In work reviewing the relative merits of researching single cases in classroom research, an important criterion for judging merit concerns the extent to which details are sufficient and appropriate for someone working in a similar situation to relate their decision-making to that described (Bassey, 1981). It is further suggested that the relatability of a case study is more important than its generalisability. However, any one-site study must examine the extent to which findings may be generalised to other settings.

This study focussed upon two major elements, the first relating the position of medicine administration in its broadest sense, and the second relating to the provision of preparation for student nurses within one school of nursing.

Applicability of the first element is achieved with relative ease, through comparison of findings with the literature identified in Chapter Two and in this Chapter, and through readers' own perceptions of what this role entails. Thus the practice of administering medicine to children may be seen to be reliable

It is more difficult to determine external validity in relation to students' perceptions of their ability, since this was, in part, related to their course of study. However, the use of theoretical constructs attempts to militate against this.

Irrespective of position in their preparation, students may respond in one of the ways described. Ultimately they must become registered and thus undertake transition to a registered role, which may mean enduring some challenges to achieving effective role function. A strength of this work is the comparability of findings with previous work related to transition, in a more general role in nursing (Luker et al. 1996 Gerrish, 2000). The use of Roy's theory in examining the problems and offering a solution is thus in theory transferable. Other problems related to transition may benefit from such consideration.

Methodological considerations

The broadly quantitative approach of this study has been limiting because it means that it has attempted to describe current perceptions of a group of individuals in a context free way rather than evaluating why any given perception may occur. This was initially deemed appropriate for determining the requirements of this research and therefore was not considered a weakness in this case. However, as the study progressed it became clear that the nature of this practice role was more situated within individuals personal context than the existing literature led the researcher to initially believe. This is not to suggest that the method was wrong for this research. Indeed the initial justification for quantitative descriptive research identified in Chapter Three of this work remains pertinent (Burns and Groves, 1993). There was a need to explore and describe phenomenon surrounding medicine administration in order to generate empirical knowledge about this area of practice. However, there is now clearly a need to explore some of the more qualitative context driven elements of medicine administration. These have been raised by this work but could not be addressed. Further research is

needed for example, to consider the nature and extent of differences in medicine administration between contexts and to explore the rationale for decision making in medicine administration practice.

There are also some limitations in terms of determining the effectiveness of proposed solutions. The resolutions in this case have been related to Roy's (1991, 1999) model and the effectiveness of solutions relies on the theory being practically applicable in this case. To qualify this, further evaluation of the application of this model, within teaching, needs to be undertaken.

Within each of the research evaluations that took place some limitations were found and were discussed at the end of the relevant chapter. The following merit comment.

In Chapter Five, a limitation related to the reliability of the interviews was seen as a major potential limitation. This was overcome by the return of part-analysed transcripts to respondents for scrutiny, and then by the process of Q sort in Chapter Six.

In Chapters Seven and Ten, limitations relate to response rates by the samples involved. These were addressed at the time, using second periods of data collection. With hindsight, more attempt may have been needed in following up those who did not respond. In order to do this, and preserve anonymity, a means would need to have been established before the study commenced.

12.8 The Contribution Of The Study To The Practice Of Nurse Education

This work has been a case study of one area of nursing, and yet the findings certainly have implications for nursing practice education. Medicine administration has emerged as a complex tertiary role situated deeply within nursing practice. Nevertheless, the way that students perceive their involvement in activities associated with medicine administration practice is significantly influenced by factors that are related to the student and their experiences rather than the nature of the role. For education of nurses then, teachers must take account of the individual nature of the experiences of students attending courses and offer them the opportunity to develop their involvement in practice according to their individual needs. In nursing education, the admission of students to children's nursing range from school leavers, to older individuals with a wealth of differing experiences. Given the evidence here, nurse teachers must enable students to evaluate their previous health care experience in developing their current involvement in practice.

For those with no practice experience, literature relating to nursing education has recommended the use of 'maps' to guide knowledge (Benner, 1984; Schon, 1987; Rolfe et al. 2001). However the nature of such maps has previously been left to individual teachers and practitioners to decide for themselves. Use of the literature as evidenced by this example of medicine administration is not always useful, and as Clifford (1995b) points out there is a paucity of evidence relating to what nurses actually do. If one is mindful about the limitations of applicability in that these findings are drawn from one academic institution and the related health trusts, this work offers a major new map for medicine administration

preparation.

The utility of mapping practice in this way must be observed cautiously, Indeed, it is recognised that simply collecting a series of activities does not identify a role in practice. However, the map produced has been found to be effective as a means of context-free communication that can operate as a starting point for students to know what activities are included within this area of practice. In other aspects of practice education, it is proposed, maps may be similarly beneficial in developing communication.

In nursing practice, the map has been used locally to consider the interface between pre-registration preparation and preceptorship education, and, thus, demonstrates utility in communication between professionals as well as between students and educators. Within this the knowledge about how students perceive their learning has been critical. The DOH (2001) benchmarking initiative 'Essence of Care' identifies areas of nursing practice where standards of care need to be written. To write such standards requires an understanding of how nurses are involved in practice. Whilst the map in this work has been extensive, it is proposed that smaller maps may be beneficial in guiding more limited components of practice. This study offers a means to develop maps in practice.

The way students perceive their involvement in medicine administration practice has identified domains are supported by other theories in education. A need for learners to gain involvement in simple activities and then develop their knowledge towards application of more abstract knowledge is acknowledged. However, this

work once again offers details relating to what kind of activities might be considered by learners to be simple operational activities within administering medicine to children, and what may require more abstract and applied knowledge. The grouping of the activities offers a basis for discussion and programme development.

Within any programme, it is not possible or desirable to teach every aspect of practice. There must be a balance of 'mediations' offered. (Eraut,1995). The education offered must enable the learner to attain safe practice and to be able to function effectively in order to be fit for purpose. In medicine administration, safety is a continuing concern. This work offers a means to provide clinical practice education taking into consideration the nature of student learning in medicine administration but also using Roy's model of role function. Once again, nurse educators are offered many theories by which they should provide practice, advanced from the philosophical stances of technical rationalism, social constructivism and latterly post-technocratic, or life becoming education (Barnett Quinn, 2000; Rolfe et al. 2001) However, in spite of attempts to provide practical advice about how these may be incorporated within teaching most appear to be taking a top-down approach of imposing a theory and then suggesting how education might adopt it. Rolfe et al.(2001) is a good case in point here and Quinn's review of nurse education (2000) also offers many similar perspectives.

This work offers an alternative 'bottom-up' perspective of examining practice and then considering how successful role function may or may not be achieved for individuals. This is a pragmatic stance, however, starting in this way has drawn

in the use of a model more traditionally focused on an individual's role function. Practice education must be determined from the utilitarian perspective in order to ensure patient safety, and effective role function is an essential criterion in ensuring 'fitness for purpose'. Whilst this research does not decry the benefit of educational theory in considering how individuals learn, it is proposed that nurse teachers can benefit from considering role function within practice education.

The strategy that has been developed demonstrates how practice education may incorporate the requirements of role function into teaching. Teachers and students are guided to explore the nature of practice from a positive perspective related to what the learner must achieve, and from a developmental one, relating to why they may not achieve it successfully. The model has been used specifically to develop teaching in relation to medicine administration practice, and uses the findings of this research as evidence for the necessary components of education. However, it is proposed that the strategy may be transferable to other areas of practice. Further research should be undertaken to evaluate the wider applicability of the Roy (1991; 1999) model within practice education.

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Appendices

Appendix 1

Conferences including presentation of this research (by date), (Proceedings available by request).

Hall, C. (1996). An Evaluation of the Preparation of Student Nurses (Child Branch) for Competence in the Administration of Medicines to Children; 'Fulfilling the Vision' Dissemination and Application of Nursing and Midwifery Research in Practice and Education, Conference Organised By The University of Sheffield.10th-11th April. University of Sheffield

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Items identified as part of a staff nurses role in medicines provision for children

1A Identify what medicine a child has received prior to admission

2A Identify what medicine a child is taking at home.

3A Assess how a medicine has been taken at home

4A Decide whether child needs to receive medication on admission

5A Assess whether child has any allergies

6A Store childs personal medicines

7A Store of parents personal medicines

8A Arrange for pharmacy to provide medicines

9A Identify what form of medicine is preferred by the child

10A Identify what utensils are required to administer the childs medicine.

11A Document admission assessment

1B Ask doctors to prescribe take home medication

2B Check take home medication before giving to child's parents

3B Arrange take home medications with pharmacy

4B Dispense medications to take home

5B Explain to parents what take home medication is for

6B Explain to parents about side effects of take home medications

7B Teach parents how to give take home medications to their child

8B Act as a resource for parents after discharge.

9B Advise parents of consequences of child not completing a course of medication as prescribed.

10B Inform parents about getting further courses of medicine if needed

11B Reconstitute powdered oral medicines.

12B Give a first dose of medicine to take home

13B Show parents how to prepare eyes for eye drops

14B Teach parents how to instill eye drops

15B Teach parents how to give rectal suppositories

16B Give parents advice about pain relief for their child

17B Ensure parents are competent to give medicines to their child at home

18B Ensure parents know how much medicine to give their child

19B Ensure parents know how often their child needs medicine to be given at home

20B Ensure that parents are happy to give medicines to their child at home

21B Give written advice to parents.

22B Follow up children in outpatients

23B Identify who will be responsible for caring for the child at home

24B Take responsibility for the administration of medicine to go home

25B Advise parents about giving antipyretics at home

26B Complete instruction label for take home medicines

27B Explain to parents what take home medicine is going to do

1C Contact anaesthetist about post-operative pain relief

2C Ask other nurses for advice about giving medicines

3C Contact 'drug information' for advice about a medicine

4C Check inappropriate prescriptions with the prescriber

5C Ask doctors to prescribe a medicine for a child

6C Advise doctors about prescribing medicines for children

7C Give information about patients medication to nursing colleagues

8C Receive information about patients medication from nursing colleagues

9C Take verbal prescription orders from doctors

10C Check medicines with another nurse

11C Advocate childs preferences related to medicines

12C Use the pharmacist as a source of information

13C Contact the on call pharmacist

14C Liaise with the pharmacist about children who take overdoses

15C Contact the pharmacist in the event of a cardiac arrest

16C Ask the pharmacist to speak with the doctor about prescriptions

17C Liaise with the pharmacist over medication errors

18C Work with the dietitian over the administration of feed additives

19C Liaise with the speech therapist over the way medicines are given to patients with difficulties.

20C Inform doctor if child is unable to take prescribed medicine

1D Determine when a medicine needs to be given

2D Ensure that the correct patient receives treatment

3D Determine by which route a medicine is to be given

4D Ensure medicine is in date

5D Check if prescribed dose is appropriate for the weight of the child

6D Calculate the volume of medicine required to be given

7D Decide to check medicines alone or with another nurse according to hospital policy

8D Assess whether child needs medication

9D Decide whether to wake a sleeping child to give a medicine

10D Prioritise order for giving a selection of medicines prescribed simultaneously

11D Choose analgesia from a selection prescribed

12D Ensure that medicine has not already been given

13D Draw up medicine in an oral syringe

14d Retrieve medicine from place of storage

15D Store medicines safely

16D Prepare skin for application of creams.

17D Refuse to give a medicine

18D Ensure that the correct medicine is given to the patient

19D Give the medicine on the correct date

20D Give the correct dose of prescribed medicine

21D Give the medicine at the right time

22D Make decisions about giving a medication on time

23D Monitor peak flow readings

24D Prepare eyes for eye drops/ointment

25D Prepare nebulised medicine

26D Act as second checker for another nurse giving medicines

27D Assess what utensils will be needed to give oral medicines

28D Ensure medicine is not given if child is allergic to it

29D Identify medicines which aren't compatible

30D Complete record for administration of controlled drugs

31D Count controlled drugs

32D Negotiate with parents about who will give medicine

33D Wash hands

34D Put on protective clothing

35D Collect equipment required to change an intravenous infusion

36D Reconstitute powdered medicines for intravenous administration

37D Check intravenous/subcutaneous cannulla for patency

39D Remove child proof locks on bottles

38D Prepare medicines for doctors to administer

40D Complete an additive label for intravenous infusion

41D Prepare medicine according to prewritten protocols

42D Use pestle and mortar to prepare medicine

43D Ensure prescription is written correctly

44D Prepare medicine to be given via a nasogastric tube

45D Check position of intravenous/subcutaneous cannulla

46D Observe intravenous/subcutaneous cannulla site for inflammation or infection

47D Recognise common dosages of medicine for children of different ages

48D Use calculator to check calculation of medicine volume required

49D Check displacement values for reconstituting powdered medicines

50D Add medicine to base fluid for intravenous infusion

51D Draw up medicines in a syringe

1E Test position of nasogastric tube

2E Administer oral medicines from a spoon

3E Give medicine rectally

4E Administer medicine via an established peripheral intravenous access

5E Administer medicine via an established central intravenous access

6E Administer medicine via a nasogastric tube

7E Document that a medication has been administered

8E Dispose of equipment used to give a medicine

9E Give nebulised medicine

10E Administer eye drops

11E Administer eye ointment

12E Administer ear drops

13E Administer nose drops

14E Give medicines using an oral syringe

15E Supervise parents giving medicines

16E Supervise child giving own medicines

17E Administer medicines through an established subcutaneous access

18E Settle child after medicine has been administered

19E Ensure child receives complete dose of medicine

20E Give medicine by intramuscular injection

21E Maintain patency of established subcutaneous cannulla

22E Apply topical creams

23E Give first dose of intravenous antibiotics according to hospital policy

24E Rebandage intravenous cannulla site

25E Give medicines without prescription on 'standing order'

26E Devise strategies for giving medicine to individual children

27E Use a syringe driver to administer medicines

1F Encourage parents to give their childs medicine

2F Assess parents ability to give medicine to their child

3F Share responsibility for medicine giving with parents

4F Explain to parents about medicines given to their child in hospital

5F Give a medicine to a child with a parent helping.

6F Develop parents confidence in giving medicine to their child

7F Liaise with parents in assessing their child's need for analgesia

8F Teach parents how prepare nebulised medicine

9F Provide guidance for parents who give their child medicines

10F Participate with other members of the multidisplinary team in teaching parents to give Intravenous medicines

11F Assess parents understanding of information about medicines

12F Contact families of long term patients prior to admission to assess medicine requirements

13F Give advice to parents by telephone for children who have taken medicine inappropriately at home.

14F Work with parents when children refuse medicines

15F Negotiate with parents how they will continue treatment after discharge

16F Respect parents views

17F Support parents whose children have taken medicines inappropriately.

18F Encourage parents to make decisions about their child's treatment

1G Involve the child in giving their medicines

2G Provide a safe area for the child where medicines are not given

3G Explain to children about what their medicines will do

4G Prepare child to take medicine

5G Gain childrens confidence

6G Allow children to make decisions about their treatment

7G Give medicine to a reluctant child

8G Enable children to understand the importance of taking their medicine

9G Assess child's likelihood of compliance in medicine taking

10G Teach children how to use inhalers

11G Act as child's advocate

12G Devise strategies with children to encourage compliance

13G Determine childs individual preferences

14G Arrange alternative forms of medication to suit child's preference

15G Teach older children to self administer their medicine

16G Assess childs ability to take prescribed medicine

17G Respect childrens rights

1H Use reference sources.

2H Decide personal capability to give a medicine

3H Observe for side effects of medicines

4H Implement hospital policy

5H Keep up to date with development related to medicines administration

6H Undertake hospital assessment to give medicine intravenously

7H Recognise an incorrect prescription

8H Monitor the effect of medicines treatment

9H Identify medicines interactions

10H Assess child development

11H Recognise when a medicine is contra-indicated

12H Identify if a child has received too much medicine

13H Give medicines safely (understand safe practice)

14H Monitor the effectiveness of analgesia

15H Observe effects of medicine in child who has overdosed

I1 Liaise between community and hospital services

I2 Act as primary checker for medicine giving

I3 Take responsibility for medicines given

I4 Check legal aspects of giving medicines

I5 Report medicine errors

I6 Take responsibility for students giving medicines

I7 Take responsibility for nursing auxilliaries giving medicines

1J Order medicines from pharmacy

2J Monitor medicine stock levels

Appendix 3

The role of the staff nurse in medicines provision for children

Ranking Exercise Summary Sheet

Most unlikely part of S/N role.

Most Likely part of S\N role.

-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

Please enter item codes into the spaces provided. If you have 55 cards, then add an extra one to the 0 column.

Please circle as appropriate
I am a teacher \ manager \ practitioner \ student

Thankyou

Appendix 4

ADMINISTERING MEDICINES

TO CHILDREN -

A LEARNING PERCEPTION QUESTIONNAIRE

INSTRUCTIONS FOR PERSONAL PERCEPTION QUESTIONNAIRE COMPLETION

This checklist questionnaire comprises a range of tasks related to the administration of medicines to children. These would usually be performed by qualified sick childrens nurses working as nurse practitioners or at D or E on the Whitley scale.

To describe your perceived learning about this role, you should read each task quickly, and decide whether you think you would normally feel able to complete the task in a practice setting, could complete it with direct supervision, or if you feel that you would not attempt the task.

A useful definition of <u>normal</u> in this instance is that you think you have performed the task during a recent practice placement, and would expect to do so again in the near future (assuming <u>all placements to have all experiences and all policies allow</u>).

As the checklist identifies items associated with the qualified nurse with some experience, it is likely that you may find tasks which you do not understand or feel unable to do currently.

<u>Do not worry about this....</u>

The important feature in your response is your belief about a realistic picture of your current understanding of the tasks.

Please <u>write 1</u> in the box adjacent to the task if you feel you would be unable to complete the task - know little or nothing about it. <u>Write 2</u> if you could undertake the task with supervision - have received some instruction (from any source).

OR <u>write 3</u> if you feel competent to undertake the task unsupervised.

PLEASE MAKE SURE THAT YOU <u>ONLY</u> WRITE A SINGLE NUMBER IN EACH BOX

SUMMARY OF INSTRUCTIONS

1	Complete the time started box at the beginning of each page
2	Write 1 in the box if you think you cannot undertake the task
3	Write 2 in the box if you think you can undertake the task with supervision
4	Write 3 in the box if you think you can undertake the task competently without supervision
5	Check that for every page each box has a 1,2, or 3.
6	Comment if you wish at the end of the checklist
7	Taking breaks makes the checklist completion less onerous
8	Complete the time finished box at the bottom of each page

THANK YOU FOR YOUR HELP

BACKGROUND INFORMATION - Staff Nurses

Checklist Number _____

SN 1 2 3

The following details will enable me to explore differences in learning perception for those with different experience related to nursing Please tick or describe as appropriate

Sex

Male		1
Female		2

When did you qualify as a children's nurse?

1 2 3 4 5 6

Which course did you complete?

Pre-Registration		1
Post-Registration		2

Was the course completed within Nottingham School of Nursing?

Yes		1
No		2

Do you have any of the following qualifications already? (Please tick all that apply)

GCSE/ 'O' Levels		1
'A' Level		2
Diploma		3
Degree		4
Higer Degree		5

Have you previously held any of the following positions in nursing? (Please place a tick for posts held in children's nursing and a cross for posts held in mixed or adult areas.) If you have been employed more than once in a post please indicate the most recent.

If you have responded to 'other' please specify below.

Sister		1
Senior Staff Nurse		2
Staff Nurse		3
SEN		4
Other		5
None		6

Time Started

1		Identify what medicine a child has received prior to admission
2		Check take home medication before giving to child's parents
3		Contact anaesthetist about post-operative pain relief
4		Determine what time medicine needs to be given
5		Test position of nasogastric tube
6		Act as second checker for another nurse giving medicines
7		Involve the child in giving their medicines
8		Use reference sources to gain information about medicines
9		Liaise between community and hospital services
10		Order medicines from pharmacy
11		Help students to assess children who need analgesia
12		Assess how a medicine has been taken at home
13		Arrange take home medications with pharmacy
14		Ask other nurses for advice about giving medicines
15		Ensure that the correct patient receives treatment
16		Put on protective clothing
17		Administer oral medicine from a spoon
18		Provide a 'safe' area for children where medicines are not given
19		Decide own personal capability to give a medicine
20		Act as primary checker for medicine giving
21		Monitor medicine stock levels
22		Teach students how to calculate medicine doses
23		Decide whether child needs to be given medication on admission
24		Dispense medications from ward "take home" stock
25		Give the medicine on the correct date

Time Finished .

Time Started

26	☐	Identify by which route a medicine is to be given
27	☐	Give medicine rectally
28	☐	Share responsibility for medicine giving with parents
28	☐	Explain to children about what their medicine will do
30	☐	Observe for side effects of medicines
31	☐	Take responsibility for medicines given
32	☐	Return expired medicine to pharmacy
33	☐	Teach students about what a medicine is used for
34	☐	Prepare medicine to be given via a nasogastric tube
35	☐	Explain to parents what take home medication is for
36	☐	Check prescriptions which appear inappropriate with the prescriber
37	☐	Ensure medicine is "in date"
38	☐	Administer medicine via an established peripheral intravenous access
39	☐	Explain to parents about medicines given to their child in hospital
40	☐	Gain children's confidence
41	☐	Wash hands
42	☐	Implement hospital policies related to administering medicines
43	☐	Monitor use of controlled medicines
44	☐	Teach students about the side effects of medicines
45	☐	Store child's personal medicines
46	☐	Explain to doctors about side effects of take home medication
47	☐	Ask doctors to prescribe a medicine for a child
48	☐	Check if prescribed dose is appropriate for the weight of the child
49	☐	Administer medicine via an established central intravenous access
50	☐	Give a medicine to a child with a parent helping

Time Finished ....

Time Started

51		Allow children to make decisions about their treatment where possible
52		Keep up to date with new developments related to medicines administration
53		Report medicine errors
54		Arrange the transportation of controlled medicines between pharmacy and work area
55		Explain medicines administration procedure to students
56		Decide whether to repeat a medicine if a child vomits after taking it
57		Arrange for pharmacy to provide medicines
58		Teach parents how to give take home medications to their child
59		Advise doctors about prescribing medicines for children
60		Calculate the amount of medicine required to be given
61		Administer medicine via a nasogastric tube
62		Liaise with parents in assessing their child's need for analgesia
63		Give medicine to a reluctant child
64		Undertake further training to give medicines intravenously
65		Take responsibility for students giving medicines
66		Give treatment regimes according to prewritten protocols
67		Organise medicines administration for a group of patients throughout a span of duty
68		Encourage students to give medicine to patients
69		Take responsibility for keys securing medicine cupboards
70		Identify what form of medicine is preferred by the child
71		Give information about patients medication to nursing colleagues
72		Decide to check medicines alone or with another nurse according to hospital policy
73		Document that a medication has been administered
74		Teach parents how to prepare nebulised medicine
75		Provide support for parents who give their children medicines in hospital

3

Time Finished ...

76		Negotiate with parents about who will give medicine
77		Enable children to understand possible outcomes of non-compliance
78		Recognise an incorrect prescription
79		Take responsibility for nursing auxiliaries giving medicines
80		Work as part of a nursing team giving medicines to a group of patients throughout a span of duty
81		Facilitate students practice in drawing up medicines with a syringe
82		Dispose of unused or wasted medicines
83		Complete an additive label for intravenous infusion
84		Advise parents of consequences of child not completing a course of medication as prescribed
85		Receive information about patients medication from nursing colleagues
86		Assess whether child needs medication which is prescribed 'PRN'
87		Dispose of equiment used to give a medicine
88		Participate with other members of the multidisciplinary team in teaching parents to give intravenous medicines
89		Assess child's likelihood of compliance in medicine taking
90		Monitor the effect of medicines treatment
91		Draw up resuscitation medicines for doctors to administer
92		Act as shift co-ordinator, supervising other staff giving medicines
93		Use an infusion pump to administer medicines
94		Inform parents about getting additional medicine to complete treatment
95		Take verbal prescription orders from doctors
96		Decide whether to wake a sleeping child to give a medicine
97		Give nebulised medicine
98		Assess parents understanding of information about medicines
99		Teach children how to use inhalers
100		Identify medicines interactions

Time Started ..

101		Check intravenous/subcutaneous cannulla for patency
102		Ensure there are sufficient supplies of medicines for next shift of staff
103		Assess students safety in checking medicines
104		Reconstitute powdered oral medicines
105		Use the pharmacist to gain information about medicines
106		Prioritise order for giving a selection of medicines prescribed simultaneously
107		Administer eye drops
108		Contact families prior to admission to assess medicine requirements
109		Act as child's advocate
110		Assess child development
111		Reconstitute powdered medicines for intravenous administration
112		Administer medicines away from usual work place
113		Encourage students to use resources to increase medicines knowledge
114		Document medication errors
115		Show parents how to perform eye care
116		Choose analgesia from a selection prescribed
117		Draw up medicines in a syringe
118		Administer eye ointment
119		Offer support for parents distressed by their childs reluctance to take medicines
120		Devise strategies with children to encourage compliance
121		Count controlled drugs
122		Recognise when a medicine is contra-indicated
123		Check student is happy with calculation and outcome
124		Take responsibility for parents who give medicines to their children in hospital
125		Teach parents how to instill eye drops

Time Finished ..

126 Seek the pharmacists advice about children who take overdoses at home

127 Ensure that medicine has not already been given

128 Add medicine to base fluid for intravenous infusion

129 Administer nose drops

130 Discuss with parents how they plan to continue treatment after discharge

131 Collect equipment required to change an intravenous infusion

132 Recognise if a child has received too much medicine

133 Take responsibility for children who self administer medicines in hospital

134 Teach parents how to give rectal suppositories

135 Arrange restocking of resuscitation medicines after use

136 Retrieve medicine from place of storage

137 Check displacement values for reconstituting powdered medicines

138 Administer ear drops

139 Respect parents views

140 Teach children to self administer medicine when appropriate

141 Give medicines safely (understand safe practice)

142 Give parents advice about pain relief for their child

143 Discuss medication errors with the pharmacist

144 Store medicines safely

145 Use calculator to check calculation of medicine volume required

146 Give medicines using an oral syringe

147 Support parents whose children have taken medicines inappropriately

148 Assess childs ability to take prescribed medicine

149 Complete record for administration of controlled drugs

150 Inform parents about how much medicine to give their child

400

151 Discuss the administration of feed additives with the dietician

152 Prepare skin for the application of creams

153 Recognise common dosages of medicine for children of different ages

154 Supervise parents giving medicines

155 Encourage parents to make decisions about their child's treatment

156 Respect childrens rights

157 Monitor effects of medicine in child who has overdosed

158 Inform parents about how often to give their child medicine

159 Liaise with the speech therapist about giving medicines to patients with swallowing difficulties

160 Refuse to give a medicine

161 Observe intravenous/subcutaneous cannulla site for inflammation

162 Supervise child giving own medicines

163 Gain assurance from parents that they are happy to give medicines to their child at home

164 Inform doctor if child cannot take medicine in the form prescribed

165 Ensure that the correct medicine is given to the patient

166 Use 'drug information' resource centre for advice about a medicine

167 Check position of intravenous/subcutaneous cannulla

168 Administer medicines through an established subcutaneous access

169 Give pre-written medicine advice sheets to parents

170 Give the correct dose of prescribed medicine

171 Ascertain whether a child has any allergies

172 Settle child after medicine has been administered

173 Advise parents about giving antipyretics at home

174 Give child's medicine at prescribed time

175 Ensure prescription is written correctly

Time Finished ..

176		Ensure child receives complete dose of medicine
177		Complete bottle instruction label for "take home" medicines distributed from ward stocks
178		Decide whether to give a medicine at the exact time prescribed
179		Give medicine by intramuscular injection
180		Monitor peak flow readings
181		Maintain patency of established subcutaneous cannulla
182		Give eye care in preparation for instilling eye drops/ointment
183		Apply topical creams
184		Prepare nebulised medicine
185		Rebandage intravenous cannulla site
186		Encourage parents to give their child's medicine
187		Devise strategies for enhancing palatability of medicines
188		Assess what utensils will be needed to give oral medicines
189		Use a syringe driver to administer medicines
190		Ensure medicine is not given if a child is allergic to it
191		Monitor the effectiveness of analgesia
192		Decide how much supervision to give individual staff
193		Observe legal aspects of giving medicines
194		Assess parents ability to give medicine to their child
195		Arrange alternative forms of medication to suit child's preference
196		Contact the "on call" pharmacist at weekends
197		Document if a medicine is not given as prescribed
198		Act as a resource for students
199		Document admission assessment regarding medicines administration
200		Act as a resource for parents after child's discharge home
201		Use pestle and mortar to prepare medicines

Time Finished ...

Time Started ..

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS CHECKLIST
PLEASE USE THE BACK PAGE OF THIS BOOKLET TO OFFER ANY COMMENTS YOU MAY WISH TO MAKE

Appendix 5
Activity item analysis identifying initial categories and skills required to achieve them.

Activity Domain 1; Simple Doing Activities

Number of Activities 16 Cluster mean score 2.75; SD .3238; SE.0399
Range 1.37-3.00; 95%confidence interval for the mean 2.675-2.834

Gp1 (3) *=Alpha increases on removal	Item	Item Mean Score	Initial comparison with content analysis descriptors	Analysis using Learning/ skills descriptors
8	Use reference sources to gain information about medicines	2.73	Medicines knowledge	Practical Skill
14	Ask other nurses for advice about medicines	2.80	Communication with other members of the multi-disciplinary team	Practical Skill
15	Ensure that correct patient receives treatment	2.62	Preparing to give a medicine	Practical Skill
16*	Put on protective clothing	2.74	Preparing to give a medicine	Practical Skill
17	Administer oral medicine from a spoon	2.70	Giving and recording a medicine	Practical Skill
18	Provide a safe area for children where medicines are not given	2.61	Working with children	Practical Skill
19	Decide on own personal capability to give a medicine	2.80	Medicines knowledge	Practical Skill
25	Give medicines on the correct date	1.83	Preparing to give a medicine	Practical Skill
37	Ensure that the medicine is "in date"	2.77	Preparing to give a medicine	Practical Skill
40	Gain children's confidence	2.85	Working with children	Practical Skill
41*	Wash hands	2.98	Preparing to give a medicine	Practical Skill
42	Implement hospital policies relating to medicines administration	2.62	Medicines knowledge	Practical Skill
87	Dispose of equipment used to give a medicine	2.79	Giving and recording a medicine	Practical Skill Pharmacological Knowledge
139	Respect parents views	2.88	Working with parents	Practical Skill
156	Respect children's rights	2.82	Working with children	Practical Skill
172	Settle a child after medicine has been administered	2.68	Giving and recording a medicine	Practical Skill

Activity Domain 2; Doing Communicating Activities
Number of Items 70; Cluster Mean Score 2.377, SD .5373; SE..0661
Range 1.01-3.00; 95% confidence interval for the mean 2.245 to 2.510

Gp 2 (1)	Item	Item Mean Score	Initial comparison with content analysis descriptors	Analysis using Learning/ skills descriptors
1	Identify what medicine a child has received prior to admission	2.44	Admission of child and family	Practical Skill
2	Check take home medicines before giving it to child's parents	2.32	Discharge of child and family	Practical Skill Pharmacology Knowledge
4	Determine what time medicines need to be given	2.41	Preparing to give a medicine	Practical Skill
5	Test position of a naso-gastric tube	2.30	Giving and recording a medicine	Advanced Practical Skill
6	Act as second checker for another nurse giving medicines	2.52	Preparing to give a medicine	Pharmacology Knowledge Mathematical Knowledge Practical Skill
7	Involve child in giving their medicines	2.41	Working with children	Practical Skill
26	Identify by which route a medicine is to be given	2.45	Preparing to give a medicine	Pharmacology Knowledge Practical Skill
28	Share responsibility for medicine giving with parents	2.33	Working with parents	Pharmacology Knowledge Practical Skill
29	Explain to children about what their medicines will do	2.52	Working with children	Pharmacology Knowledge Practical Skill
30	Observe for side effects of medicines	2.32	Medicines knowledge	Pharmacology Knowledge Practical Skill
32	Return expired medicines to pharmacy	2.32	Organisation /Management role	Practical Skill
35	Explain to parents what take home medication is for	2.35	Discharge of child and family	Pharmacology Knowledge Practical Skill
39	Explain to parents about medicine given to their child in hospital	2.32	Working with parents	Pharmacology Knowledge Practical Skill
45	Store child's personal medicines	2.42	Admission of child and family	Pharmacology Knowledge Practical Skill
50	Give a medicine to a child with a parent helping	2.41	Working with parents	Practical Skill
51	Allow children to make decisions about their treatment where possible	2.26	Working with children	Pharmacology Knowledge Practical Skill
52*	Keep up to date with new developments related to medicines administration	2.50	Medicines knowledge	Pharmacology Knowledge
53	Report medicine errors	2.32	Personal responsibility	Pharmacology Knowledge Practical Skill
63	Give medicine to a reluctant	2.24	Working with children	Practical Skill

	child			
70	Identify what form of medicine is preferred by a child	2.47	Admission of child and family	Pharmacology Knowledge Practical Skill
71	Give information about a patients medication to nursing colleagues	2.32	Communication with other members of the multi-disciplinary team	Pharmacology Knowledge Practical Skill
73	Document that a medicine has been administered	2.44	Giving and recording a medicine	Practical Skill
75	Provide support for parents who give their children medicines in hospital	2.09	Working with parents	Pharmacology Knowledge Practical Skill
76	Negotiate with parents about who will give medicine	2.30	Preparing to give a medicine	Practical Skill
77	Enable children to understand possible outcomes of non-compliance	2.18	Working with children	Pharmacology Knowledge Practical Skill
80	Work as part of a nursing team giving medicines to a group of patients through out a span of duty	2.30	Organisation /Management role	Practical Skill
82	Dispose of unwanted or wasted medicines	2.53	Added in after content analysis but would fit in Giving and recording a medicine	Pharmacology Knowledge Practical Skill
85	Receive information about patients medication from nursing colleagues	2.53	Communication with other members of the multi-disciplinary team	Practical Skill
89	Assess childs likelihood of compliance in medicine taking	2.17	Work with children	Practical Skill
96	Decide whether to wake a sleeping child (For medicines)	2.26	Preparing to give a medicine	Advanced Practical Skill Pharmacology Knowledge
97	Give a nebulised medicine	2.35	Giving and recording a medicine	Pharmacology Knowledge Practical Skill
105	Use the pharmacist to gain information about medicines	2.53	Communication with other members of the multi-disciplinary team	Practical Skill
107	Administer eye drops	2.55	Giving and recording a medicine	Pharmacology Knowledge Practical Skill
109	Act as child's advocate	2.35	Working with children	Pharmacology Knowledge Practical Skill
110	Assess child's development	2.30	Medicines knowledge	Practical Skill
115	Show parents how to perform eye care	2.27	Discharge of child and family	Practical Skill
117	Draw up medicines in a syringe	2.42	Preparing to give a medicine	Practical Skill
118	Administer eye ointment	2.41	Giving and recording a medicine	Pharmacology Knowledge Practical Skill
119	Offer support for parents distressed by their child's	2.39	Working with parents	Practical Skill

	reluctance to take medicines			
120	Devise strategies with children to encourage compliance	2.35	Working with children	Pharmacology Knowledge Practical Skill
125	Teach parents how to instill eye drops	2.29	Discharge of child and family	Pharmacology Knowledge Practical Skill
127	Ensure that medicine has not already been given	2.50	Preparing to give a medicine	Practical Skill
129*	Administer nose drops	2.15	Giving and recording a medicine	Practical Skill Pharmacology Knowledge
136	Retrieve medicine from place of storage	2.39	Preparing to give a medicine	Pharmacology Knowledge Practical Skill
138	Administer ear drops	2.27	Giving and recording a medicine	Pharmacology Knowledge Practical Skill
141	Administer medicine safely (understand safe practice)	2.53	Medicines knowledge	Pharmacology Knowledge Practical Skill
144	Store medicines safely	2.55	Preparing to give a medicine	Pharmacology Knowledge Practical Skill
145	Use calculator to check calculation of medicine volume required	2.45	Preparing to give a medicine	Mathematical Knowledge
146	Give medicine via an oral syringe	2.39	Giving and recording a medicine	Practical Skill
152	Prepare skin for the application of creams	2.26	Preparing to give a medicine	Pharmacology Knowledge Practical Skill
155	Encourage parents to make decisions about their child's treatment	2.26	Working with parents	Pharmacology Knowledge Practical Skill
160*	Refuse to give a medicine	2.30	Preparing to give a medicine	Practical Skill
161	Observe intravenous / subcutaneous canulla site for inflammation	2.32	Preparing to give a medicine	Practical Skill
163	Gain assurance from parents that they are happy to give medicines to their child at home	2.32	Discharge of child and family	Practical Skill Pharmacology Knowledge
164	Inform Dr if child cannot take medicine in the form prescribed	2.41	Communication with other members of the multi-disciplinary team	Practical Skill
165	Ensure that the correct medicine is given to the patient	2.41	Preparing to give a medicine	Practical Skill
166*	Use "drug information resource centre" for advice about a medicine	2.42	Communication with other members of the multi-disciplinary team	Practical Skill
169*	Give pre-written medicine advice sheets to parents	2.45	Discharge of child and family	Practical Skill Pharmacology Knowledge
170	Give the correct dose of a	2.38	Preparing to give a	Mathematical

	prescribed medicine		medicine	Knowledge Practical Skill
171	Ascertain whether the child has any allergies	2.39	Admission of a child and family	Practical Skill
174	Give child's medicine at prescribed time	2.47	Preparing to give a medicine	Practical Skill
176	Ensure child receives complete dose of medicine	2.44	Giving and recording a medicine	Practical Skill
180	Monitor peak flow readings	2.35	Preparing to give a medicine	Practical Skill
182	Give eye care in preparation for instilling eye drops	2.33	Preparing to give a medicine	Practical Skill Pharmacology Knowledge
183	Apply topical creams	2.47	Giving and recording a medicine	Practical Skill Pharmacology Knowledge
185	Rebandage intravenous canulla	2.35	Giving and recording a medicine	Practical Skill
186	Encourage parents to give their child's medicine	2.44	Working with parents	Practical Skill
188	Assess what utensils will be needed to give oral medicines	2.45	Preparing to give a medicine	Practical Skill
190	Ensure medicine is not given if child is allergic to it	2.33	Preparing to give a medicine	Practical Skill
193	Observe legal aspects of giving medicines	2.38	Personal responsibility	Pharmacology Knowledge Practical Skill

Activity Domain 3; Specific Autonomous Practice
Number of activity items 62;
Cluster Mean Score 2.12; SD.649; SE.079
Range 1.00-3.00 95%confidence interval for the mean; 1.966 to 2.285.

Gp3 (2)	Activity Item	Item Mean Score	Initial comparison with content analysis descriptors	Analysis using Learning/ skills descriptors
3	Contact anaesthetist about post – operative pain relief	2.05	Communication with other members of the multi-disciplinary team	Practical Skill Pharmacological Knowledge
9	Liase between community and hospital services	2.14	Organisational and management role	Practical Skill
10	Order medicines from pharmacy	2.12	Organisational and management role	Practical Skill
12	Assess how a medicine has been taken at home	2.17	Admission of Child and family	Practical Skill Pharmacological Knowledge
13	Arrange take home medications with pharmacy	2.17	Discharge of child and family	Practical Skill Pharmacological Knowledge
22	Teach students how to calculate medicine doses	1.94	Working with students	Mathematical Knowledge
27	Give medicine rectally	2.15	Giving and recording a medicine	Practical Skill Pharmacological Knowledge
31	Take responsibility for medicines given	2.12	Personal responsibility	Advanced Practical Skill Pharmacological Knowledge
34	Prepare medicine to be given via a naso-gastric tube	2.09	Preparing to give a medicine	Advanced Practical Skill
36	Check prescriptions which appear inappropriate with the prescriber	2.17	Communication with other members of the multi-disciplinary team	Pharmacological Knowledge Mathematical Knowledge
43	Monitor use of controlled medicines	2.17	Organisational and management role	Advanced Practical Skill
46	Explain to parents about side effects of take home medications	2.15	Discharge of child and family	Practical Skill Pharmacological Knowledge
47	Ask Drs to prescribe a medicine for a child	2.08	Communication with other members of the multi-disciplinary team	Practical Skill Pharmacological Knowledge
48	Check if prescribed dose is appropriate for the weight of the child	2.20	Preparing to give a medicine	Mathematical Knowledge
57	Arrange for pharmacy to provide medicines	2.20	Admission of Child and family	Practical Skill
58	Teach parents how to give take home medicines to their child	2.23	Discharge of child and family	Practical Skill Pharmacological Knowledge

60	Calculate the amount of medicine to be given	2.15	Preparing to give a medicine	Mathematical Knowledge
61	Administer a medicine via a nasogastric tube	2.14	Giving and recording a medicine	Advanced Practical Skill Pharmacological Knowledge
62	Liase with parents in assessing their child's need for analgesia	2.18	Working with Parents	Practical Skill Pharmacological Knowledge
66	Give treatment regimes according to prewritten protocols (Patient Group Directions)	2.02	Preparing to give a medicine	Mathematical Knowledge
67	Organise medicines administration for a group of patients throughout a span of duty	1.97	Organisational and management role	Advanced Practical Skill
69	Take responsibility for keys securing medicines cupboards	2.11	Added in after content analysis but would fit in Personal responsibility	Advanced Practical Skill
72*	Decide to check medicines alone or with another checker	2.08	Preparing to give a medicine	Practical Skill Pharmacological Knowledge
74	Teach parents how to prepare a nebulised medicine	2.09	Working with Parents	Advanced Practical Skill Pharmacological Knowledge
83	Complete an additive label for intravenous infusion	1.97	Preparing to give a medicine	Practical Skill Pharmacological Knowledge
84	Advise parents of consequences of child not completing a course of medicine	2.15	Discharge of child and family	Practical Skill Pharmacological Knowledge
86	Assess whether child needs medication which is prescribed PRN	2.14	Preparing to give a medicine	Practical Skill Pharmacological Knowledge
90	Monitor effects of medicines treatment	2.23	Medicines knowledge	Practical Skill Pharmacological Knowledge
98	Assess parents understanding of information about medicines	2.20	Working with Parents	Practical Skill Pharmacological Knowledge
99*	Teach children how to use inhalers	2.17	Working with children	Advanced Practical Skill Pharmacological Knowledge
104	Reconstitute powdered oral medicines	2.02	Discharge of child and family	Practical Skill Pharmacological Knowledge Mathematical

				Knowledge
113*	Encourage students to use resources to increase medicines knowledge	2.18	Working with students	Advanced Practical Skill Pharmacological Knowledge
114	Document medication errors	2.02	Added in after content analysis but would fit in Giving and recording a medicine	Advanced Practical Skill
121	Count controlled drugs	2.14	Preparing to give a medicine	Mathematical Knowledge
126*	Seek the pharmacists advice about children who take overdoses at home	2.23	Communication with other members of the multi-disciplinary team	Practical Skill
130	Discuss with parents how they plan to continue treatment after discharge	2.14	Discharge of child and family	Practical Skill Pharmacological Knowledge
131	Collect equipment required to change an intravenous infusion	2.21	Preparing to give a medicine	Practical Skill Pharmacological Knowledge
134	Teach parents how to give rectal suppositories	2.02	Discharge of child and family	Advanced Practical Skill
140	Teach children to self administer medicines when appropriate	2.15	Working with children	Advanced Practical Skill Pharmacological Knowledge
142	Give parents advice about pain relief	2.17	Discharge of child and family	Practical Skill Pharmacological Knowledge
147	Support parents whose children have taken medicine inappropriately	2.17	Working with Parents	Practical Skill Pharmacological Knowledge
148	Assess child ability to take prescribed medicine	2.15	Working with children	Advanced Practical Skill Pharmacological Knowledge
149	Complete record for administration of controlled drugs	2.08	Preparing to give a medicine	Practical Skill

150	Inform parents about how much medicine to give their child	2.06	Discharge of child and family	Practical Skill Pharmacological Knowledge
151*	Discuss that administration of feed additives with dietician	1.95	Communication with other members of the multi-disciplinary team	Practical Skill Pharmacological Knowledge
154	Supervise parents giving medicines	2.23	Giving and recording a medicine	Practical Skill Pharmacological Knowledge
158	Inform parents about how often to give their child medicine	2.26	Discharge of child and family	Advanced Practical Skill Pharmacological Knowledge
159*	Liase with the speech therapist about giving medicines to patients with swallowing difficulties	2.05	Communication with other members of the multi-disciplinary team	Advanced Practical Skill
162	Supervise child giving own medicines	2.20	Giving and recording a medicine	Practical Skill Pharmacological Knowledge
173	Advise parents about giving antipyretics at home	2.08	Discharge of child and family	Advanced Practical Skill Pharmacological Knowledge
175	Ensure prescription is written correctly	2.24	Preparing to give a medicine	Practical Skill Mathematical Knowledge
178	Decide whether to give a medicine at the exact time prescribed	2.12	Preparing to give a medicine	Advanced Practical Skill Pharmacological Knowledge
179	Give medicine by intra-muscular injection	2.03	Giving and recording a medicine	Practical Skill Pharmacological Knowledge
184	Prepare nebulised medicine	2.18	Preparing to give a medicine	Practical Skill Pharmacological Knowledge
187	Devise strategies for enhancing palatability of medicines	1.97	Giving and recording a medicine	Practical Skill Pharmacological Knowledge
191	Monitor the effectiveness of analgesia	2.24	Medicines knowledge	Practical Skill Pharmacological Knowledge
194	Assess parents ability to give medicine to their child	2.18	Working with parents	Practical Skill Pharmacological Knowledge

195	Arrange alternative forms of medicine to suit child's preference	2.09	Working with children	Advanced Practical Skill
196	Contact the on call pharmacist at weekends	2.15	Communication with other members of the multi-disciplinary team	Practical Skill
197	Document if a medicine is not given as prescribed	2.18	Added in after content analysis but would fit in Giving and recording a medicine	Practical Skill
199	Document admission assessment regarding medicine administration	2.20	Admission of child and family	Practical Skill
201	Use a pestle and mortar to prepare medicines	2.05	Preparing to give a medicine	Practical Skill Pharmacological Knowledge

Activity Domain 4 Decision Making/Teaching Activities
Number of Activity Items 44.
Cluster Mean Score 1.83; SD .642, SE, .079
Range 1.00-2.978; 95% confidence interval for mean 1.670 to 1.986

Gp 4 (4)	Activity Items	Item Mean Score	Initial comparison with content analysis descriptors	Analysis using Learning/ skills descriptors
11	Help students to assess children who need analgesia	1.85	Working with students	Pharmacological Knowledge Advanced Practical Skill
21	Monitor medicine stock levels	1.88	Organisational and management role	Practical Skill
23	Decide whether a child needs to be given medication on admission	1.74	Admission of Child and family	Advanced Practical Skill
33	Teach students about what a medicine is used for	1.80	Working with students	Advanced Practical Skill Pharmacological Knowledge
44	Teach students about the side effects of medicines	1.79	Working with students	Advanced Practical Skill Pharmacological Knowledge
54	Arrange the transportation of controlled medicines between pharmacy and the work area	1.89	Organisational and management role	Advanced Practical Skill
55	Explain medicines administration procedures to students	1.83	Working with students	Pharmacological Knowledge Practical Skill
59	Advise Drs about prescribing medicines for children	1.74	Communication with other members of the multi-disciplinary team	Pharmacological Knowledge Advanced Practical Skill
64*	Undertake further training to give medicines intravenously	2.14	Medicines Knowledge	Advanced Practical Skill
65	Take responsibility for students giving medicines	1.53	Personal responsibility	Mathematical Knowledge Pharmacological Knowledge Advanced Practical Skill
68	Encourage students to give medicines to patients	1.76	Working with students	Advanced Practical Skill
78	Recognise an incorrect prescription	2.00	Medicines knowledge	Mathematical Knowledge Pharmacological Knowledge
81	Facilitate student practice in drawing up medicines with a	1.77	Working with students	Advanced Practical Skill

	syringe			
93	Use an infusion pump to administer medicines	1.83	Added in after content analysis but would fit in Giving and recording a medicine	Advanced Practical Skill
94	Inform parents about getting additional medicine to complete treatment	1.94	Discharge of child and family	Practical Skill
95	Take verbal prescription orders	1.62	Communication with other members of the multi-disciplinary team	Pharmacological Knowledge Advanced Practical Skill
100	Identify medicines interactions	1.86	Medicines knowledge	Pharmacological Knowledge
101	Check intravenous /subcutaneous annulae for patency	1.86	Preparing to give a medicine	Advanced Practical Skill
102	Ensure there are sufficient supplies of medicines for next shift of staff	1.91	Organisational and management role	Advance Practical Skill
103	Assess students safety in checking medicines	1.91	Working with students	Mathematical Knowledge Practical Skill
106	Prioritise order for giving a selection of medicines prescribed simultaneously	1.89	Preparing to give a medicine	Pharmacological Knowledge
108*	Contact families prior to admission to assess medicine requirements	1.91	Admission of Child and family	Practical Skill
111	Reconstitute powdered medicines for intravenous administration	1.86	Preparing to give a medicine	Advanced Practical Skill Pharmacological Knowledge
112*	Administer medicines away from usual workplace	1.76	Organisational and management role	Advanced Practical Skill
116	Choose analgesia from a selection prescribed	1.91	Preparing to give a medicine	Pharmacological Knowledge
122	Recognise when a medicine is contra-indicated	1.85	Medicines knowledge	Pharmacological Knowledge
123	Check student is happy with calculation and outcome	1.86	Working with students	Mathematical Knowledge Practical Skill
124	Take responsibility for parents who give medicines to their children	1.80	Added in after content analysis but would fit in Personal responsibility	Pharmacological Knowledge Mathematical Knowledge Advanced Practical Skill
128	Add medicine to base fluid for intravenous infusion	1.70	Preparing to give a medicine	Advanced Practical Skill Pharmacological Knowledge
132	Recognise if a child has received too much	1.85	Medicines knowledge	Pharmacological Knowledge

	medicine			
133	Take responsibility for children who self administer medicines in hospital	1.73	Added in after content analysis but would fit in Personal responsibility	Pharmacological Knowledge Mathematical Knowledge Advanced Practical Skill
135	Arrange restocking of resuscitation medicines after use	1.77	Communication with other members of the multi-disciplinary team	Advanced Practical Skill
137	Check displacement values for reconstituting powdered medicines	1.83	Preparing to give a medicine	Pharmacological Knowledge Mathematical Knowledge Advanced Practical Skill
143	Discuss medication errors with the pharmacist	1.95	Communication with other members of the multi-disciplinary team	Pharmacological Knowledge
153	Recognise common dosages of medicines for children of different ages	1.92	Preparing to give a medicine	Mathematical Knowledge Pharmacological Knowledge
157	Monitor effects of Medication in a child who has overdosed	1.86	Medicines knowledge	Pharmacological Knowledge Advanced Practical Skill
167	Check position of intravenous/ subcutaneous cannulla	1.67	Preparing to give a medicine	Advanced Practical Skill
168*	Administer medicines through and established subcutaneous access	1.71	Giving and recording a medicine	Advanced Practical Skill
177	Complete bottle instruction label for "take home" medicines distributed from ward stocks	1.85	Discharge of child and family	Pharmacological Knowledge Practical Skill
181	Maintain patency of established subcutaneous canulla	1.74	Giving and recording a medicine	Advanced Practical Skill
189	Use a syringe driver to administer medicines	1.88	Giving and recording a medicine	Practical Skill
192	Decide how much supervision to give individual staff	1.70	Organisational and management role	Advanced Practical Skill

198	Act as a resource for students	1.76	Working with students	Pharmacological Knowledge Mathematical Knowledge Advanced Practical Skill
200	Act as a resource for parents after a child has been discharged	1.95	Discharge of child and family	Pharmacological Knowledge Advanced Practical Skill

Activity Domain 5; Adventuring Activities
Number of Activity Items 9
Domain Mean Score 1.56, SD.464, SE .057,
Range 1-2.75. 95% Confidence Interval for Mean 1.44 to 1.674

Gp1 (5) *=alpha increases on removal	Activity Item	Item Mean Score	Initial comparison with content analysis descriptors	Analysis using Learning/ skills descriptors
20	Act as primary checker for medicine giving.	1.83	Personal responsibility	Mathematical Knowledge Pharmacological Knowledge Advanced Practical Skill
24	Dispense medications from ward take home stock	1.76	Discharge of child and family	Mathematical Knowledge Pharmacological Knowledge Practical Skill
38	Administer medicines via an established peripheral intravenous access	1.42	Giving and recording a medicine	Pharmacological Knowledge Advanced Practical skill
49	Administer medicine via an established central intravenous access	1.20	Giving and recording a medicine	Pharmacological Knowledge Advanced Practical Skill
56	Decide whether to repeat a medicine if a child vomits after taking it	1.76	Added in after content analysis but would fit in Medicines Knowledge	Pharmacological Knowledge Advanced Practical Skill
79	Take responsibility for nursing auxiliaries giving medicines	1.33	Personal responsibility	Advanced Practical Skill
88*	Participate with other members of the multi-disciplinary team to teach parents to give intravenous medicines	1.67	Working with Parents	Mathematical Knowledge Pharmacological Knowledge Advanced Practical Skill
91	Draw up resuscitation medicines for Drs to administer	1.58	Preparing to give a medicine	Pharmacological Knowledge Advanced Practical Skill
92	Act as shift co-ordinator, supervising other staff giving medicines	1.48	Organisational and management role	Advanced Practical Skill

Appendix 6 Sessions

Session One Custody and Storage of Drugs

Module Number: 4; Position in Course: CFP;Site appraised: M

	CARRY OUT PRACTICE	DESCRIBE PRACTICE	UNDERSTAND THEORY IN A PROFESSIONAL CONTEXT	EXPLAIN USE OF THEORY	UNDERSTAND PRACTICE	EVALUATE PRACTICE
ADMISSION OF A CHILD AND FAMILY	STORE MEDICINE SAFELY (2)					
DISCHARGE OF A CHILD AND FAMILY						
COMMUNICATION WITH OTHER MEMBERS OF THE NURSING AND MULTIDISCIPLINARY TEAM		DISCUSS ROLES OF DOCTOR, PHARMACIST NURSE IN RELATION TO MEDICINES WORK AS PART OF A NURSING TEAM IN GIVING MEIDICINES TO CHILDREN (2)				
PREPARATION TO GIVE A MEDICINE						
GIVING AND RECORDING A MEDICINE	DISPOSE OF UNUSED OR WASTED MEDICINES (2)	SAFE ADMIN AND RECORDING OF SCHEDULE 2 CONTROLLED DRUGS (3) DESCRIBE STORAGE OF MEDICINE (2) ACCORDING TO LAW (2) AND LOCAL POLICY (1)				

WORKING WITH PARENTS						
WORKING WITH CHILDREN						
MEDICINES KNOWLEDGE	TO USE BNF TO CLASSIFY DRUGS, AND AS A RESOURCE (1) IMPLEMENT HOSPITAL POLICIES RELATED TO MEDICINES ADMINISTRATION (2)					
PERSONAL RESPONSIBILITY	RECEIVE CFP STUDENT GUIDE FOR MEDICINE ADMINISTRATION					
ORGANISATION/ MANAGEMENT ROLES		DESCRIBE LIAISON BETWEEN HOSPITAL AND COMMUNITY SERVICES(3)				
WORKING WITH STUDENT NURSES						

Session Two Pharmacology

Module Number: 13; Position in Course: CFP; Site appraised N

FACILITATES LINKS BETWEEN THEORY AND PRACTICE BY ENABLING LEARNERS TO: CATEGORIES OF NURSING ROLE IN MEDICTNE ADMINISTRATION	CARRY OUT PRACTICE	DESCRIBE PRACTICE	UNDERSTAND THEORY IN A PROFESSIONAL CONTEXT	EXPLAIN USE OF THEORY	UNDERSTAND PRACTICE	EVALUATE PRACTICE
ADMISSION OF A CHILD AND FAMILY						
DISCHARGE OF A CHILD AND FAMILY						
COMMUNICATION WITH OTHER MEMBERS OF THE NURSING AND MULTIDISCIPLINARY TEAM						
PREPARATION TO GIVE A MEDICTNE						
GIVING AND RECORDING A MEDICTNE		DESCRIBE ROUTES OF DRUG ADMINISTRATION AND ADVANTAGES OF EACH. (2)				
WORKING WITH PARENTS						
WORKING WITH CHILDREN						
MEDICINES KNOWLEDGE		DESCRIBE HOW A DRUG IS USED BY THE BODY (4) DESCRIBE MAJOR PHARMACEUTICAL GROUPS (4) DESCRIBE POTENTIAL UNWANTED EFFECTS OF MEDICINES				

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		(4)				
PERSONAL RESPONSIBILITY						
ORGANISATION/ MANAGEMENT ROLES						
WORKING WITH STUDENT NURSES						

Session Three: Administration of Medication

Module Number: 20-21; Position in Course: CFP; Site Appraised 0

FACILITATES LINKS BETWEEN THEORY AND PRACTICE BY ENABLING LEARNERS TO: CATEGORIES OF NURSING ROLE IN MEDICINE ADMINISTRATION	CARRY OUT PRACTICE	DESCRIBE PRACTICE	UNDERSTAND THEORY IN A PROFESSIONAL CONTEXT	EXPLAIN USE OF THEORY	UNDERSTAND PRACTICE	EVALUATE PRACTICE
ADMISSION OF A CHILD AND FAMILY						
DISCHARGE OF A CHILD AND FAMILY						
COMMUNICATION WITH OTHER MEMBERS OF THE NURSING AND MULTIDISCIPLINARY TEAM		CHECK PRESCRIPTIONS WHICH APPEAR INAPPROPRIATE WITH THE PRESCRIBER (3)				
PREPARATION TO GIVE A MEDICINE	READ A PRESCRIPTION UNDERSTANDING ABBREVIATIONS ACT AS SECOND CHECKER FOR ANOTHER NURSE GIVING MEDICINE (2).	DESCRIBE HOW TO GIVE THE CORRECT MEDICINE (1) ON THE CORRECT DATE (1), AT THE CORRECT TIME (2), IN THE CORRECT AMOUNT (2). DESCRIBE HOW TO STORE AND ADMINISTER CONTROLLED DRUGS (3) STORE MEDICINE SAFELY(2)			UNDERSTAND ADMINISTRATION DIFFERENCES IN DIFFERENT AREAS (4)	

GIVING AND RECORDING A MEDICINE	GIVE A MEDICINE ORALLY (1) AND RECORD ON PRESCRIPTION SHEET (2) ENSURE PRESCRIPTION IS WRITTEN CORRECTLY IDENTIFY BY WHICH ROUTE A MEDICATION IS TO BE GIVEN (2) COMPLETE CONTROLLED DRUG RECORD (3)					
WORKING WITH PARENTS						
WORKING WITH CHILDREN		DESCRIBE PATIENT SELF ADMINISTRATION OF MEDICINE (3)				
MEDICINES KNOWLEDGE	USE RESOURCES TO GAIN INFORMATION ABOUT MEDICINES (1,2)		IMPLEMENT HOSPITAL POLICIES RELATED TO ADMINISTERING MEDICINE (1) UNDERSTAND PROFESSIONAL ACCOUNTABILITY IN ADMINISTERING MEDICINE (1)			
PERSONAL RESPONSIBILITY						
ORGANISATION/ MANAGEMENT ROLES						
WORKING WITH STUDENT NURSES						

Session Four Administration of Injections

Module Number: 20/2; Position in Course: CFP; Site Appraised 0

FACILITATES LINKS BETWEEN THEORY AND PRACTICE BY ENABLING LEARNERS TO: CATEGORIES OF NURSING ROLE IN MEDICINE ADMINISTRATION	CARRY OUT PRACTICE	DESCRIBE PRACTICE	UNDERSTAND THEORY IN A PROFESSIONAL CONTEXT	EXPLAIN USE OF THEORY	UNDERSTAND PRACTICE	EVALUATE PRACTICE
ADMISSION OF A CHILD AND FAMILY						
DISCHARGE OF A CHILD AND FAMILY						
COMMUNICATION WITH OTHER MEMBERS OF THE NURSING AND MULTIDISCIPLINARY TEAM						
PREPARATION TO GIVE A MEDICINE	WASH HANDS (1)	DESCRIBE PRINCIPLE OF ASEPSIS	ENSURE THE CORRECT PATIENT (2) RECEIVES THE CORRECT DRUG(1), AT THE CORRECT TIME (1), IN THE CORRECT AMOUNT (2). ACT AS SECOND CHECKER FOR ANOTHER NURSE GIVING MEDICINE (2) STORE MEDICINE SAFELY (1)			
GIVING AND RECORDING A MEDICINE	DRAW UP MEDICINE IN A SYRINGE (2) GIVE AN INTRA – MUSCULAR INJECTION (3) GIVE A SUBCUTANEOUS	DESCRIBE SITES AND TYPES OF INJECTIONS (2) DISCUSS USE OF PROTECTIVE CLOTHING	COMPLETE CONTROLLED DRUG RECORD (3)			

	INJECTION DISPOSE OF EQUIPMENT SAFELY (1)					
WORKING WITH PARENTS						
WORKING WITH CHILDREN						
MEDICINES KNOWLEDGE			GIVE MEDICATION ACCORDING TO HOSPITAL POLICY (1)			
PERSONAL RESPONSIBILITY			DISCUSS OWN ROLE IN GIVING MEDICINES (1)			
ORGANISATION/ MANAGEMENT ROLES						
WORKING WITH STUDENT NURSES						

Session Five (1) Administering Medicines to Children Part 1 Drugs and Drug Administration in Paediatrics

Module Number: C28+C29; Position in Course: Child Branch

FACILITATES LINKS BETWEEN THEORY AND PRACTICE BY ENABLING LEARNERS TO: CATEGORIES OF NURSING ROLE IN MEDICINE ADMINISTRATION	CARRY OUT PRACTICE	DESCRIBE PRACTICE	UNDERSTAND THEORY IN A PROFESSIONAL CONTEXT	EXPLAIN USE OF THEORY	UNDERSTAND PRACTICE	EVALUATE PRACTICE
ADMISSION OF A CHILD AND FAMILY						
DISCHARGE OF A CHILD AND FAMILY						
COMMUNICATION WITH OTHER MEMBERS OF THE NURSING AND MULTIDISCIPLINARY TEAM						
PREPARATION TO GIVE A MEDICINE	CALCULATE AMOUNT OF MEDICINE TO BE GIVEN (2)					
GIVING AND RECORDING A MEDICINE		DESCRIBE ROUTES OF DRUG ADMINISTRATION AND ADVANTAGES OF EACH. (2)				
WORKING WITH PARENTS		EXPLAIN TO PARENTS ABOUT MEDICINES GIVEN TO THEIR CHILD IN HOSPITAL (2,3)				
WORKING WITH CHILDREN		DESCRIBE HOW TO EXPLAIN TO CHILDREN ABOUT WHAT THEIR MEDICINE WILL DO. (2,3)				
MEDICINES KNOWLEDGE		DESCRIBE HOW A DRUG IS USED BY THE BODY (4) DESCRIBE MAJOR PHARMACEUTICAL DRUGS				

		USED IN CHILDRENS NURSING DESCRIBE HOW TO GIVE MEDICINE SAFELY /USING SPECIFIC EXAMPLES				
PERSONAL RESPONSIBILITY				ADMINISTER MEDICINES ACCORDING TO PROFESSIONAL GUIDELINES AND LOCAL POLICY (1) WITH AWARENESS OF COMPETENCE		
ORGANISATION/ MANAGEMENT ROLES						
WORKING WITH STUDENT NURSES						

Session Five (2): Administering Medicine to Children Part 2

Module Number: C28+C29; Position in Course: Child Branch

FACILITATES LINKS BETWEEN THEORY AND PRACTICE BY ENABLING LEARNERS TO: CATEGORIES OF NURSING ROLE IN MEDICINE ADMINISTRATION	CARRY OUT PRACTICE	DESCRIBE PRACTICE	UNDERSTAND THEORY IN A PROFESSIONAL CONTEXT	EXPLAIN USE OF THEORY	UNDERSTAND PRACTICE	EVALUATE PRACTICE
ADMISSION OF A CHILD AND FAMILY						
DISCHARGE OF A CHILD AND FAMILY						
COMMUNICATION WITH OTHER MEMBERS OF THE NURSING AND MULTIDISCIPLINARY TEAM		CHECK PRESCRIPTION THAT APPEAR INNAPPROPRIATE WITH THE PRESCRIBER (3)				
PREPARATION TO GIVE A MEDICINE	CALCULATE THE AMOUNT OF MEDICINE REQUIRED TO BE GIVEN. (2)	ENSURE MEDICINE IS IN DATE. ENSURE CORRECT PATIENT (2) RECEIVES TREATMENT GIVE CORRECT DOSE (2) GIVE MEDICATION AT PRESCRIBED TIME (2) GIVE MEDICINE VIA CORRECT ROUTE ENSURE PRESCRIPTION IS WRITTEN CORRECTLY (3)				
GIVING AND RECORDING A MEDICINE		DOCUMENT THAT A MEDICINE HAS BEEN ADMINISTERED				
WORKING WITH PARENTS		EXPLAIN TO PARENTS ABOUT MEDICINES GIVEN TO THEIR CHILD IN				

		HOSPITAL (2)				
WORKING WITH CHILDREN		INVOLVE THE CHILD IN GIVING THEIR MEDICINES (2) EXPLAIN TO CHILDREN ABOUT WHAT THEIR MEDICINES DO (2)	ASSESS CHILD COMPLIANCE (2) ASSESS CHILDS ABILITY TO TAKE PRESCRIBED MEDICINE (2)			
MEDICINES KNOWLEDGE	MONITOR THE EFFECT OF MEDICINES TREATMENT (3) OBSERVE FOR SIDE EFFECTS OF MEDICINES (2)	MONITOR THE EFFECT OF MEDICINES TREATMENT (3) MONITOR THE EFECTIVENESS OF ANALGESIA (3) OBSERVE FOR SIDE EFFECTS OF MEDICINES (2)				
PERSONAL RESPONSIBILITY	OBSERVE LEGAL ASPECTS OF GIVING MEDICINE (2)			OBSERVE LEGAL ASPECTS OF GIVING MEDICINE (2)		
ORGANISATION/ MANAGEMENT ROLES						
WORKING WITH STUDENT NURSES						
WORKING WITH STUDENT NURSES						